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A M E R I C A N

RAILROAD JOURNAL.

STEAM NAVIGATION, COMMERCE, MINING, MANUFACTURES.

HENRY V. POOR, *Editor.*

ASSISTANT EDITORS:

JAMES T. HODGE, *For Mining and Metallurgy.*

CHARLES T. JAMES, *For Manufactures and the Mechanic Arts.*

M. BUTT HEWSON, *For Civil Engineering.*

SATURDAY, MARCH 23, 1850.

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NEW-YORK:

PUBLISHED WEEKLY, BY

JOHN H. SCHULTZ & CO.

Room 12, Third Floor,

No. 136 Nassau Street.

AMERICAN

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HEARST & CO., PUBLISHERS.

ESTABLISHED IN 1847.
PUBLISHED WEEKLY, BY
HEARST & CO., 136 NASSAU STREET, NEW YORK.

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Second Series, Vol. 7, No. 12—Whole No. 221.

ESTABLISHED IN 1847.

NEW-YORK.

PUBLISHED WEEKLY, BY

JOHN H. SCHULTZ & CO.

Room 12, Third Floor,

No. 136 Nassau Street.

IRON BRIDGES, BRIDGE & ROOF BOLTS,
etc. STARKS & PRUYN, of Albany, New York,
having at great expense established a manufactory with
every facility of Machinery for Manufacturing Iron
Bridges, Bridge and Roof Bolts, together with all kinds
of the larger sizes of Screw Bolts, Iron Railings, Steam
Boilers, and every description of Wrought Iron Work,
are prepared to furnish to order, on the shortest notice,
any of the above branches, of the very best of American
Refined Iron, and at the lowest rates.

During the past year, S. & P. have furnished several
Iron Bridges for the Erie Canal, Albany Basin, etc.
—and a large amount of Railroad Bridge Bolts, all of
which have given the most perfect satisfaction.

They are permitted to refer to the following gentlemen:

Charles Cook,	Canal Commissioners
Nelson J. Beach,	of the
Jacob Hinds,	State of New York.
Willard Smith, Esq.,	Engineer of the Bridges for
Messrs. Stone & Harris,	the Albany Basin.
Mr. Wm. Howe,	Railroad Bridge Builders,
Mr. S. Whipple,	Springfield, Mass.
	Engineer & Bridge Builder,
	Utica, N. Y.

January 1, 1849.

**TO RAILROAD COMPANIES AND BUILD-
ERS OF MARINE AND LOCOMOTIVE
ENGINES AND BOILERS.**

PASCAL IRON WORKS.

WELDED WROUGHT IRON TUBES

From 4 inches to 1 in calibre and 2 to 12 feet long,
capable of sustaining pressure from 400 to 2500 lbs.
per square inch, with Stop Cocks, T, L, and
other fixtures to suit, fitting together, with screw
joints, suitable for STEAM, WATER, GAS, and for
LOCOMOTIVE and other STEAM BOILER FLUES.



Manufactured and for sale by
MORRIS, TASKER & MORRIS,
Warehouse E. E. Corner of Third & Walnut Streets,
PHILADELPHIA.

To Railroad Companies, etc.

The undersigned has at last suc-
ceeded in constructing and securing
by letters patent, a Spring Pad-lock
which is secure, and cannot be
knocked open with a stick, like other
spring locks, and therefore particu-
larly useful for locking Cars, and
Switches, etc.

Companies that are in want of a
good Pad-lock, can have open samples sent them that
they may examine and judge for themselves, by send-
ing their address to

C. LIEBRICH,
46 South 8th St., Philadelphia.

November 3, 1849.

Mattewan Machine Works.

THE Mattewan Company have added to their Ma-
chine Works an extensive LOCOMOTIVE ENGINE
department, and are prepared to execute orders for Lo-
comotive Engines of every size and pattern—also *Ten-
ders, Wheels, Axles,* and other railroad machinery, to
which they ask the attention of those who wish such
articles, before they purchase elsewhere.

STATIONARY ENGINES, BOILERS, ETC.,
Of any required size or pattern, arranged for driving
Cotton, Woollen, or other Mills, can be had on favora-
ble terms, and at short notice.

COTTON AND WOOLLEN MACHINERY,
Of every description, embodying all the modern im-
provements, second in quality to none in this or any
other country, made to order.

MILL GEARING,

Of every description, may be had at short notice, as
this company has probably the most extensive assort-
ment of patterns in this line, in any section of the
country, and are constantly adding to them.

TOOLS.

Turning Lathes, Slabbing, Planing, Cutting and
Drilling Machines, of the most approved patterns, to-
gether with all other tools required in machine shops,
may be had at the Mattewan Company's Shops, Fish-
kill Landing, or at 66 Beaver street, New York.

WM. B. LEONARD, Agent.

HEAD QUARTERS FOR RUBBER GOODS.



The Union India Rubber Company,

MANUFACTURERS AND DEALERS IN EVERY VARIETY OF

GOODYEAR'S PATENT METALLIC RUBBER FABRICS,

Which they offer on the most liberal terms at their Warehouse,

NO. 19 NASSAU STREET, NEW YORK.

Articles which this Company has the exclusive right to make comprise in part

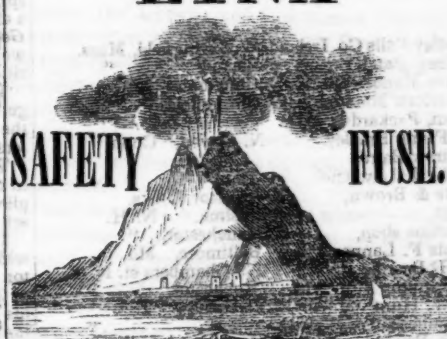
Beds,	Overcoats,	Life Preservers,	Mail Bags,	Camp Blankets,
Pillows,	Leggins,	Boat Floats,	Breast Pumps,	Travelling Bags,
Cushions,	Syringes,	Souwesters,	Saddle Bags,	Wading Boots,
Caps,	Canteens,	Gun Cases,	Clothing of all kinds,	Horse Covers,
Tents,	Buoys,	Portable Boats,	Carriage Cloth, assor.	Piano Forte Covers,
Bottles,	Maps,	Horse Fenders,	Hospital Sheeting,	Railroad Gum,
Tubs,	Sheet Gum,	Water Tanks,	Mattress Covers,	Hose, all kinds,
Caps,	Tarpaulins,	Army Goods,	Bathing Caps,	Shower Baths,
Pants,	Life Jackets,	Navy Goods,	Baptismal Pants,	Chest Expanders.

Together with all new applications of the Patent Rubber, which with Boots and Shoes, Packing, Machine
Belting, Suspenders, Gloves and Mittens, Tobacco Wallets, Balls, Baby Jumpers, Elastic Bands, etc., etc.,
will be sold to the Trade at Factory prices.

* All orders for special articles to be manufactured, should be accompanied with full descriptions and draw-
ings.

October 20, 1849.

ETNA



SAFETY FUSE.
THIS superior article for igniting the charge in wet
or dry blasting, made with DUPONT'S best pow-
der, is kept for sale at the office and depot of

REYNOLDS & BROTHER,

Sole Manufacturers, of

No. 85 Liberty St.

NEW YORK.

And in the principal cities and towns in the U. States.
The Premium of the AMERICAN INSTI-
TUTE was awarded to the Etna Safety Fuse at the
late Fair held in this city.

November 3, 1849.

RAILROAD

India-rubber Springs.

If any Railroad Company or other party desires it,
the NEW ENGLAND CAR COMPANY will furnish
India-rubber Car Springs made in the form of washers,
with metallic plates interposed between the layers, or
in any other form in which they can be made; in all
cases guaranteeing the right to use the same against
any and all other pretended rights or claims whatsoever.

F. M. Ray, 96 Broadway, New York.

E. CRANE, 99 State Street, Boston.

1849.

DEAN, PACKARD & MILLS,

MANUFACTURERS OF ALL KINDS OF

RAILROAD CARS,

SUCH AS

PASSENGER, FREIGHT AND CRANK CARS,

— ALSO —

SNOW PLOUGHS AND ENGINE TENDERS

OF VARIOUS KINDS.

CAR WHEELS and AXLES fitted and furnished

at short notice; also, STEEL SPRINGS

of various kinds; and

SHAFTING FOR FACTORIES.

The above may be had at order at our Car Factory,

REUEL DEAN,
ELIJAH PACKARD, } SPRINGFIELD, MASS.
ISAAC MILLS, }

Iron Safes.

FIRE and Thief-proof Iron Safes, for Merchants,
Banks and Jewelers use. The subscriber manu-
factures and has constantly on

hand, a large assortment of Iron
Safes, of the most approved con-
struction, which he offers at much
lower rates than any other manu-
facturer. These Safes are made
of the strongest materials, in the
best manner, and warranted su-
periorly fire proof and free from dampness. Western
merchants and the public generally are invited to call
and examine them at the store of E. Corning & Co.,
sole agents, John Townsend, Esq., or at the manu-
factory.

Each safe furnished with a thief-detector lock, of the
best construction.

Other makers' Safes repaired, and new Keys and
Locks furnished at the shortest notice.

H. W. COVERT,

cor. Steuben and Water sts. Albany.

August 24, 1849.



NEW YORK IRON BRIDGE COMPANY.

The Bridges manufactured by this Company having been fully tested on different Railroads, by constant use for more than two years, and found to answer the full expectations of their most sanguine friends, are offered to the public with the utmost confidence as to their great utility over any other Bridge now known. The plan of this Bridge is to use the iron so as to obtain its greatest longitudinal strength, and at the same time it is so arranged as to secure the combined principles of the Arch, Suspension and Triangle, all under such controlling power as causes each to act in the most perfect and secure manner, and at the same time impart its greatest strength to the whole work.

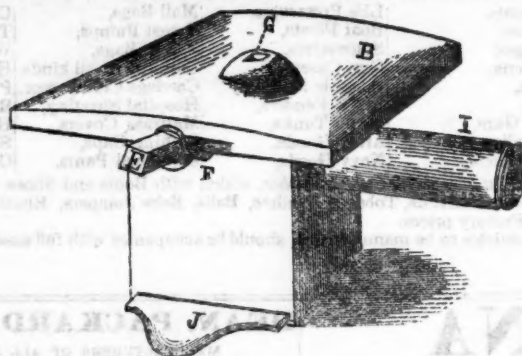
THE NEW YORK IRON BRIDGE COMPANY are prepared to furnish large quantities of Iron Bridging for Railroad or other purposes, at short notice, and at moderate prices.

Models, and pamphlets giving full descriptions of the above Bridge, with certificates based on actual trial from undoubted sources, will be found at the office of the Company, 39 Jauncey Court, Wall st., or of W. RIVER & BROTHERS, 19 Nassau Street, where terms of contract will be made known, and where orders are solicited.

August 29, 1849.

M. M. WHITE,
Agent for the Company.

E. Harris' Patent Rotary Blacksmith Tuyere.



LETTERS Patent were issued January 9, 1849, to E. HARRIS, of Springfield, for an Improved Rotary Blacksmith Tuyere. Since that time there have been some hundreds put in operation, giving satisfaction and full proof of superiority over all others.

This Tuyere is so arranged that by one movement it can be changed from the largest work to the smallest; at the same time the fire is changed in proportion, thereby making a great saving in coal. Words cannot convey the full merits of this Tuyere; nor is it deemed necessary to speak in disparagement of other Tuyeres, as every smith is capable of judging for himself, and will give merit where merit is due.

I will simply say that there has not been a single instance where I have had my Tuyere put in use but it has given full satisfaction, and is recommended by all who have used them, as being superior to any other ever introduced. I would invite all to give them a trial; and the names of those using them being given, I hope it may induce others to try them, as they recommend themselves.

Western Railroad Shop,	Springfield, Mass.
"	Pittsfield, "
Connecticut val. "	Springfield "
"	N. Hampton "
Hartford "	Hartford, Conn.
New Haven "	New Haven "
Norwich and Worcester,	Norwich "
N. York and N. Haven,	New Haven "
Saratoga and Whitehall,	Saratoga, N. Y.
Vermont Central,	"
Hudson and Berkshire,	Hudson, Mass.
L. Kingsley,	Canton, "

Hadley Falls Co. Ireland,	W. Springfield, Mass.
Sidney Patch,	Boston, "
Ames Manuf. Cor.,	Chickopee, "
American Machine w'ks,	Springfield, "
Dean, Packard & Mills	"
G. Frank Bradley,	N. Haven, Conn.
Andrew Baird,	"
Collis & Lawrence	"
Slate & Brown,	Windsor Locks,
Gage,	Nashua, N. H.
Machine shop,	Manchester, "
Louis F. Lanney,	Baltimore, Md.
J. H. Baerdid,	179 Chambers st. N. Y.
J. Fanning	Rochester, "
G. W. Hunt	41 Gold st. "
Chamberlain & Waldo,	"
P. S. Burges, carriage maker,	"
Samuel Miller,	"
J. Leggett,	Steverson falls, "
J. E. Harris,	Hilledale, "
John L. Graham,	Albany, "
David Dalsell,	South Egremont, Mass.
Roys & Wilcock,	Berlin, Conn.

Agents for the sale of Tuyeres:

B. B. Stevens in New York and Connecticut.
W. S. Seymour in Massachusetts and R. Island.
A. J. VanAllen has the Agency for the Western and Southern States, and is now travelling through those States. Any communication addressed to the patentee will receive prompt attention.

E. HARRIS, Patentee,
Springfield, Mass.

November 23, 1849.

CHRONOMETERS.

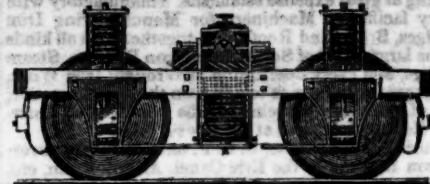
MERCHANTS, Ship Owners, Captains and others, are invited to examine the advantages offered in the purchase of Chronometers, by Hewitt & Son, Makers, 99 Wall Street, (up stairs,) in their superior quality and great reduction of price.

H. & S. have for many years been engaged in the manufacture of Chronometers, for the first houses in the trade and also, for the Navy of most Nations,

and have received numerous rewards for their superior performance. Their Chronometers may be obtained from the Observatory at Liverpool, by order from H. & S., and at City Road, London. They are warranted to give satisfaction; but if not approved of, will be exchanged in New York, London, or Liverpool.

Rating, Cleaning and Repairs, at low charges.
The Trade supplied on the most liberal terms.
November 17, 1849.

F. M. Ray's Patent India-rubber Car Springs.



India-rubber Springs for Railroad Cars were first introduced into use, about two years since, by the inventor. The New England Car Company, now possesses the exclusive right to use, and apply them for this purpose in the United States. It is the only concern that has tested their value by actual experiment, and in all arguments in favor of them, drawn from experience of their use, are in those cases where they have been furnished by this company. It has furnished every spring in use upon the Boston and Worcester road, and, in fact, it has furnished all the springs ever used in this country, with one or two exceptions, where they have been furnished in violation of the rights of this company; and those using them have been legally proceeded against for their use, as will invariably be done in every case of such violation.

The Spring formed by alternate layers of India-rubber discs and metal plates, which Mr. Fuller claims to be his invention, was invented by Mr. Ray in 1844. In proof of which we give the deposition of Osgood Bradley, of the firm of Bradley & Rice, of Worcester, Mass., car manufacturers, and men of the highest respectability. In this deposition, in relation to the right of parties to use these springs, he says:

"I have known Mr. Ray since 1835. In the last of May or the commencement of June, 1844, he was at my establishment, making draft of car trucks. He staid there until about the first of July, and left and went to New York. Was gone some 8 or 10 days, and returned to Worcester. He then on his return said he had a spring that would put iron and steel springs into the shade. Said he would show it to me in a day or two. He showed it to me some two or three days afterwards. It was a block of wood with a hole in it. In the hole he had three pieces of India-rubber, with iron washers between them, such as are used under the nuts of cars. Those were put on to a spindle running through them, which worked in the hole. The model now exhibited is similar to the one shown him by Ray. After the model had been put into a vice, witness said that he might as well make a spring of putty. Ray then said that he meant to use a different kind of rubber, and referred to the use of Goodyear's Metallic Rubber, and that a good spring would grow out of it." There are many other depositions to the same effect.

The history of the invention of these springs, together with these depositions, proving the priority of the invention of Mr. Ray, will be furnished to all interested at their office in New York.

This company is not confined to any particular form in the manufacture of their springs. They have applied them in various ways, and they warrant all they sell.

The above cut represents precisely the manner in which the springs were applied to the cars on the Boston and Worcester road, of which Mr. Hale, President of this road speaks, and to which Mr. Knevit refers in his advertisement. Mr. Hale immediately corrected his mistake in the article quoted by Mr. Knevit, as will be seen by the following from his paper of June 8, 1848. He says:

INDIA-RUBBER SPRINGS FOR RAILROAD CARS.—"In our paper yesterday, we called attention to what promises to be a very useful invention, consisting of the application of a manufacture of India-rubber to the construction of springs for railroad cars. Our object was to aid in making known to the public, what appeared to us the valuable properties of the invention, as they had been exhibited on trial, on one of the passenger cars of the Boston and Worcester railroad. As to the origin of the invention we had no particular knowledge, but we had been informed that it was the same which had been introduced in England, and which had been subsequently patented in this country; and, we were led to suppose that the manufacturers who have so successfully applied this material, in the case to which we referred had become possessed of the right to use that patent. It will be seen from the following communication, addressed to us by a member of the company, by which the Worcester railroad was supplied with the article upon which our remarks were based, that we were in an error, and that the springs here introduced are an American invention, as well as an American manufacture. How far the English invention may differ from it we have had no opportunity of judging."

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HENRY V. POOR, Editor.

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SECOND QUARTO SERIES, VOL. VI., No. 12.] SATURDAY, MARCH 23, 1850. [WHOLE No. 727, VOL. XXIII.

ASSISTANT EDITORS,

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American Railroad Journal.

PUBLISHED BY J. H. SCHULTZ & Co., 136 NASSAU ST.

Saturday, March 23, 1850.

Northwestern Lead Mines.

Having been employed in the summer of 1841 in making an examination of the mineral region of Wisconsin and of part of that of Minnesota, I gathered some details, which were subsequently published in the American Journal of Science, vol. XLIII, No. 1. That paper forms the basis of the account I now propose to give of the Northwestern Lead Mines.

The region containing these mines, according to the Report of D. D. Owen, M. D., who was commissioned in the year 1839 to explore it for the U. States government, comprehends 62 townships in Wisconsin, 8 in Iowa, and 10 in Illinois, all near the Mississippi river: its extreme length from east to west being 87 miles, and width from north to south 54 miles. The townships are each six miles square.

The great belt of limestone extending over this district, which is the repository of the lead ores, is according to Prof. Hall of Albany, the continuation of the Niagara limestone of the New York system, Formation VI of the Pennsylvania and Virginia Reports. This group of strata, which in the eastern States, covers but little territory, is, in the west-

ern, the prominent rock over a very large extent of country. Here too it is found productive in the ores, which at the east are seen scattered through it in insignificant quantity. Its strata appear uniformly horizontal, until by tracing them some miles, a prevailing dip to the south is discovered. No rocks of igneous origin break through and disturb the stratification, as is seen in the lead region of Missouri; and the limestone is here of more uniform character than that of the more southern metalliferous belt, which frequently passes into a true siliceous rock.

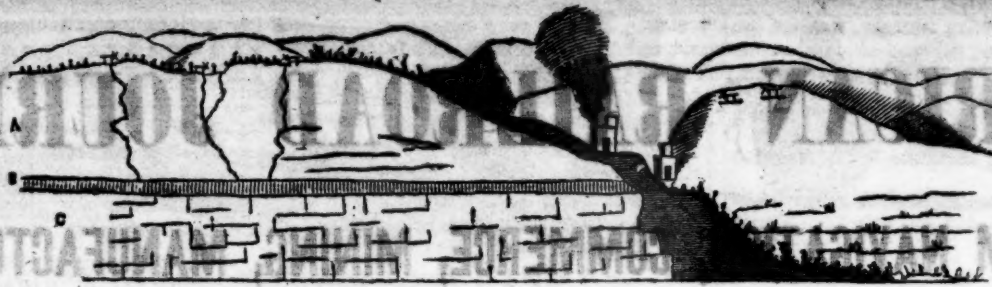
Messrs. Owen and Locke call this metalliferous formation the "Cliff limestone," because it is often seen in the western country in abrupt cliffs along the banks of the streams; and they remark that its upper beds—those strata which occupy the surface of the country for some distance south of Galena in Illinois—are not found productive in lead ore. And they also suggest that the fissures may still occur beneath the surface in this more southern district, and sometime even this be the field of mining operations.

The lead region is a rolling hilly country; the hills sometimes covered with an open growth of oak, but as often entirely free from timber, and clothed with the tall prairie grass only. The summits are of a uniform height, and form ridges, along which one may travel miles in different directions without descending to the water courses. These commence in little swales or gullies near the top of the country, and gradually widen as they descend, till they are lost in the bottoms of the larger streams beneath. The topographical features of the country are peculiar and uniform. The bottoms have the appearance of beds of ancient currents, far greater than the present streams which flow along them. They slope gently down stream; they turn from a cliff of rock on one side into the opposite bank. These cliffs seen nowhere else, are of frequent occurrence along the boundaries of the bottoms: in all other places the rocks lie concealed beneath the deep soil. Besides these evidences of denudation, "natural mounds," as they are called, occasionally are seen standing high above the general level of the country, which are rocky, and strewn often with huge blocks fallen from their beds. Their summits formed of harder materials than the limestone of the country, as the overlying hornstone of the Blue mounds, or the siliceous limestone of the Sinsinewa mound, have resisted

the wearing action of the waters; and they now stand as monuments of the devastation produced around them. But if this be so, they are the only evidences that such forces have once been in operation; for in the western part of Wisconsin there are no primary bowlders—no loose rocks, but those which once evidently made a part of the formations on which they now repose; in the eastern part of the territory however, and in Iowa, such bowlders are not wanting. Whether this region may have been in part protected by the high lands to the north of it, and the progress of the bowlders been thus intercepted and turned aside, must be determined by more extended observations. This supposition is rendered more plausible by the unusual course of the Wisconsin river, it suddenly turning from a south to a west direction. In its valley, however, where it flows towards the west, I found no bowlders except the pebbles brought down by the river itself.

The general elevation of the country above the larger streams would not vary far, I think, from 350 feet. A large portion of the surface is open prairie, and the groves of oak and hickory are often inadequate to the wants of the people. The prairies are not like those of the lower country, extensive plains, but a succession of rolling hills spreading as far as one can see, covered with tall grass and scattering bushes. Travellers need not be confined to roads, but may ride in any direction without a path, finding everywhere good footing except in crossing the streams in the bottoms. In winter the roads are concealed beneath the snow, and people travelling in sleighs wander off and are often lost on the prairies, as in the thickest woods or at sea.

Throughout the extensive tract defined as the lead region, lead ore may be sought for with prospect of success on every township, and on almost every square mile. And fortunately it is so well watered, and the little streams fall so rapidly, that power for the smelting furnaces may almost always be obtained near the mines. The surface on the prairies and in the groves is everywhere broken by the holes sunk in "prospecting"—often dangerous pitfalls to the traveller, and a trap to the wild deer; while here and there a collection of windlasses and air-sails, and high piles of earth and rubbish mark a spot where prospecting has led to extensive mining operations. Beneath the "Cliff limestone," is a thin stratum



A—Cliff Limestone. B—Blue Limestone. C—Sandstone.

of blue limestone, and this rests on a body of brown sandstone. As one goes from the southern line of Wisconsin to the north, this blue limestone is observed to become higher and higher in the hills, and the lead diggings to be everywhere above it. Though the sandstone rocks come out in bold cliffs on the sides of the hills, no veins of ore are ever seen in them; but in the Cliff limestone above they are found, though the rock and its fissures lie hidden under a great depth of soil.

These fissures are of every degree of width, from fifty feet down to thin cracks; all of them do not contain ore; the large chambers, when they have any mineral in them are lined on the walls with a coating of galena seldom over a foot thick, while the interior is filled with clay. Sometimes across the crevices run horizontal layers of galena—and again it occurs in loose "chunks" in the clay of the fissures or of the soil above—and again it runs in a vertical sheet down—or still again filling narrow fissures like veins and beds in the solid rock. But galena is not the only ore these fissures contain; mixed with it in every proportion, and even sometimes getting the better of it, and shutting it out completely, occur both the carbonate and sulphuret of zinc; the one known to the miners by the name of "dry bone"—the other "black jack." From the abundance of the carbonate of zinc, and its being an ore, that, when clean, yields about 60 per cent. of the oxide, it appears probable that it will sometime become an object of importance;—now it is considered a great obstruction, and the galena, when mixed with much of the zinc ore, brings an inferior price.

The direction of the fissures downward is as variable as their size and shape. They run like cracks through a rock—sometimes vertically, sometimes inclined, and sometimes horizontally between the strata. But in all cases on reaching the sandstone they are, as far as is yet known, unproductive. They are followed when they are found to yield three inches of galena; this being the least thickness it is thought worth pursuing through rock, and it is very rare indeed that a continuous vein is found exceeding one foot in thickness. The horizontal direction of the fissures is more uniform; those producing the most ore almost universally running east and west. This is considered the direction of the main lodes of Wisconsin; other cross them running north and south, and sometimes a quartering course. In the east and west veins the ore is more frequently found in large crystals whose surface is smooth and striae obscure; in the north and south veins it is of a closer texture and steeple luster, more readily crumbling into small particles; in this two sets of striae may be observed crossing each other at right angles; the ore from the quartering veins is distinguished by the oblique angle of the crossing of the two sets of striae. At the points of crossing of veins, a change in the

richness of the lodes usually takes place, but the change is as often for the worse as for the better. The fissures lie in ranges, which extend at right angles with their direction; in length the fissures do not appear to exceed a few hundred feet. In the neighborhood of Mineral Point, when many veins are wrought, the "diggings" are seen to extend with little irregularity in a north and south belt; the portion of this to the west produces lead ore; half a mile farther east the fissures contain copper ore, and still farther in the same direction hematite abounds in them.

The deepest shafts in this vicinity are sunk about 90 feet; and on the hills they may be worked to that depth without any trouble from the water. Begun on the highest ground, the bottom of them hardly approaches the sandstone, and into this it appears no object to continue them.

The lead ore is sought for by the miners at their own risk. Wherever they think there is a prospect of discovering a lead,* there they commence their operations; two of them joining to "prospect" or sink experimental shafts. Sometimes they spend a year in unsuccessful exploring, but with the expectation of being repaid for it all by a happy discovery. If they strike a "lead," they offer the ore to the nearest smelters at the market price; and the owner of the land then comes in for his share of one fifth, the original discoverers being entitled by the custom of the country to four fifths of all the ore they raise. Should the discovery promise to be an important one, other miners are attracted to it from the country around. They come in companies proportioned to the reputation the new diggings have acquired, and in a month's time a little village of log cabins with a population of three or four hundred people has sprung up in the midst of what was just before wild woods or an uninhabited prairie. The new comers, not having been instrumental in making the discovery, have an inferior claim to their predecessors, who are not permitted by "the rules of the miners" to monopolize more than a certain number of square rods around their successful shafts. As each one comes, he selects his own ground, and so many rods are staked out for his operations, but of the ore he raises four fifths go to the proprietors of the land, and he is allowed but one fifth. This high premium upon the discovery of new "leads" must prove very unfavorable to the thorough working of the mines and complete extraction of the ores; for miners will rather choose to go off and hunt up new veins, than continue to work one only moderately productive, of which they receive but one fifth.

Alabama.

The citizens have, by a vote of 404 to 7, voted to impose upon themselves a tax of \$300,000 for the Mobile and Ohio railroad.

* Pronounced lead, so called from its leading to something.

For the American Railroad Journal.

I have read with some surprise an article by Mr. Fairbairn in the February No. of the Journal of the Franklin Institute, on the smelting of magnetic iron ores. The article seems to me to show great errors in judgment, as well as in matters of fact; and is not what we should expect from one who evidently thinks himself so well informed, practically and theoretically, as to be able to communicate valuable information to his readers. I have not time now to mention all the mistakes which have met my eye. It is not true that the furnaces at Stanhope, N. J., are the only ones where magnetic iron ore has been successfully used alone for the production of good pig iron. Nor is it true that the expense of mixing hematite ores with the magnetic is "an expense most needlessly incurred"—or that the iron thus produced is inferior to that reduced wholly from the magnetic ore. The truth is, that the strength of cast iron made from hematite ore alone, is superior to that of any other as yet made in the United States; actual experiments prove it to be so. I am yet to be informed that any cast iron, Russia or Swedish, has given evidence of so good a tensile strength as some from the Franklin furnace, New Jersey, and from Dutchess county, New York, both made from pure hematite. There is one furnace in New York, where a rich magnetic ore has been used alone during the past year, and there is another not many miles from it, where the same ore has been carried and mixed with brown hematite and smelted. What was the result? The iron obtained from the mixture of the two was the best. The proportion of hematite is not usually so great as Mr. F. makes it; one box of the hematite to five, six, or even seven of the magnetic is found to answer best, or most facilitates the fusion of the heavier ore. Although the hematite has more oxygen to part with than the magnetic ore, yet if the blast be properly portioned it will assume the state of cast iron at about the same time with the iron that was previously in the state of protoxide, so that both will come down together—the globules of the reduced hematite encircling themselves with a covering of the fused earthy parts of the fluxes.

The following paragraph seems to show that the writer does not discriminate between two very different processes. As to a matter of fact, there is an iron ore harder than pig iron, or silicate of iron, which is often mixed with magnetic ores. There is evidently a great difference between smelting and melting.

"For, against the alleged impossibility of smelting a hard magnetic oxide of iron, there is the refutation in the daily practice of the iron founder who melts the pig metal itself, and it will not be said that there is any iron ore which is harder than the pig."

"The practice of the iron founder may, therefore, point to the true modes of smelting the magnetic ores of the United States."

We do not think there is much weight to the first part of the following sentence, and the last part is obviously absurd.

"Were the cupola furnace filled with lump anthracite coal, two tons would equally be required for smelting a ton of pig iron, as a ton of iron from ores which are almost all iron, for there is frequently 90 per cent. of iron contained in the magnetic ores."

We have often heard people speak at random of iron ore that will yield 90 per cent. of iron, but we never heard any one go so far beyond all limits of reason, as to say, "there is frequently 90 per cent. of iron contained in the magnetic ores." There is a maximum limit to the content of iron in magnetic ore, and Mr. F. ought not to be ignorant of the fact. Even the pure crystallized magnetic iron ore, cannot possibly contain but 72 per cent. of metallic iron; so that any amount beyond that must be native iron. Will Mr. F. inform us where native iron is so frequently contained in magnetic iron ore?—Gov. Dickinson once informed the writer, that he thought he had found native iron in one single instance at his celebrated mine at Suckasunny, N. J.; but he afterwards changed his mind; and his ore, though it is uniformly as rich as any in the United States, never comes up to 70 per cent. even of cast iron. We doubt if it yields, on an average, over 65 per cent. It is the richest ore—oxidum ferroso ferricum of Berzelius. The magnetic iron ore of the Lehigh, so far from containing 90 per cent., does not afford but 63 per cent., even by chemical analysis which gives the whole quantity. For this fact, distinctly stated, we refer Mr. F. to Professor H. D. Rogers' 5th Annual Report on the Geological Survey of Pennsylvania. Mr. F. seems to argue that because the founder uses but a small quantity of limestone, therefore the smelter should use but a little, because there is only 10 per cent. of earthy ingredients in the ore. There is another aspect of the same strange error he has fallen into before. Nor is it true that the "quantity of earthy adulteration is less in magnetic iron ore than in any other whatever." It is no less than it is in the Oligisto magnetic ore, called specular ore, or even in the purest hematites.

The "chemistry of red short iron" will hardly be satisfied with Mr. F.'s explanation that the "metal of calcium is the cause of the property hitherto ascribed to the phosphoric substance" of Bergman. He says the "calcium may remain in the metal by the greater specific gravity which will cause its precipitation amongst the metal in the hearth." Now here is a metal only twice as heavy as water, which is supposed to combine with the iron by virtue of its specific gravity. Were it to form an alloy with the iron, of which he gives us no proof, there is no certainty it would impart to the iron the property which Bergman attributed to phosphorous. We are however by no means inclined to admit that Bergman was correct in his opinion. At his time nothing was known of the effects of aluminum and silicon as combined with the iron.

Mr. F. informs us that the transition limestone of the Schuylkill region approaches almost perfect purity, and usually contains 94 per cent. of pure lime. The usual composition of pure limestone is lime 56, and carbonic acid 44; or one atom of each. Had not Mr. F. to be charged with the errors already pointed out, we might have supposed this last one to have been made through inadvertence, accidentally confounding pure lime with its carbonate. But 94 per cent. would not be considered a pure limestone, as there would then be 6 per cent. of

impurity; so we are at a loss in what way to explain the error. Many of our limestones contain magnesia, and it is probable that such is the case with that from the Schuylkill.

Mr. F. informs us that the "British islands possess a geology not within the probabilities of any deposits of iron ore of a class superior to the hematites," meaning that magnetic ores do not occur there. Here again he is mistaken, for they are found in several parts of Scotland, though owing to the scarcity of wood and the greater abundance of other ores, they have not attracted much attention. It is not to be supposed that the granite of the hills of Scotland is barren of the mines which are found in it everywhere else. Are we to understand that the *metegric* iron shown to Mr. F. on the Lehigh was found there. For ought that appears to the contrary we should infer that it may be common there. The collectors of such treasures will be anxious to be further informed on this subject.

The statements made by Mr. F. in regard to the comparative values of hot and cold blast iron, we think are far from correct. We have had in our own experience sad and manifold proofs of the great inferiority of hot blast iron, whether made in anthracite or charcoal furnaces. We do not deny that in Great Britain a hot blast iron has been made with anthracite of superior strength compared with the general run of Scotch pig iron made from coke or from new bituminous coal. Mr. Alexander, in his valuable report on the manufacture of iron, p. 257, says, "when the stress is longitudinal, and the fibres pulled asunder, the ratio is unfavorable to the hot blast." Mr. F. does not admit the inferiority of hot blast iron. Our opinion of it is something like that of Mr. F.'s touching the "everlasting ton of limestone."

FERRICUM.

Irving House, March 13, 1850.

H. V. POOR, Esq.

Dear Sir—During a recent hurried excursion through the northwestern portion of New Jersey, I had the curiosity to visit some of the forges and furnaces located in that region, so prolific in minerals of every sort. Among the most interesting of these iron manufactories may be named the extensive works of Oliver Ames and Sons, situated at Wanayanda in the county of Sussex, within a mile or two of the New York State line. This establishment, intended for the exclusive manufacture of pig iron, has been erected there, among the mountains, within four or five years; and though situated in the very midst of the fuel which it uses, and the ore which it converts, yet owing to the present unusual depression in the iron trade, it is obliged to stop, discharge all its hands, and wind up its business concerns. My arrival at the works was somewhat ill-timed, as it was about the period determined upon for closing its affairs, and the laborers were coming in from every direction to receive their dues. It was a deplorable sight, to see the office of the Messrs. Ames filled with their workmen, who were thus thrown out of immediate employment, and compelled to loose their time in search of something to do elsewhere. When the furnace is in full blast, the prosecution of its business requires the labor of about one hundred and fifty men, who are occupied in cutting wood, making charcoal, raising ore, and hauling iron. The services of these men have now all to be dispensed with, their houses will be left tenantless, and they with their families will find it necessary to remove to some other locality.

Do not scenes like these, which may be witnessed in all our iron-manufacturing states, present a curious commentary upon the present protective policy of the United States? Does not the document recently addressed to our Secretary of State, by Minister Bulwer, read strangely, when viewed in connection with facts like these? Can it be possible that he is serious in telling us that the iron trade of England is in a languishing condition? Let this ingenious diplomatist take a glance at this important part of our own manufacturers. Let him visit the mountains of Maryland and Virginia—of Pennsylvania and New Jersey—where hundreds and thousands have been hitherto employed in the manufacture of iron, who are now comparatively idle. Let him visit the forges, where no hammers are heard—and the furnaces where no fires burn.—Is he aware, (if he is not he should be informed,) that the pig iron which in this country costs eighteen, twenty and twenty-two dollars per ton, can be produced in his own for ten, eleven or twelve dollars per ton? Can it be that he is ignorant of the fact, that laborers around the iron works of this country, who command six and seven and eight shillings per day, may readily be hired in his own country for half that sum? Is he not acquainted with the fact, that iron may be delivered (aside from the duty) into the city of New York from the majority of the furnaces in Scotland, with as little expense as from the majority of furnaces in our own country? And lastly is he aware, that in producing pig iron, nineteen-twentieths of the whole cost is labor, and that hence the cost of the metal depends almost entirely upon the price of the labor employed in producing it? The raw material employed in making iron, namely, the trees as they stand in the forest, and the ore and coal, as it lies in the ground and embraces only about five per cent. of its entire cost, the remaining ninety-five per cent. being all labor and nothing but labor.—Hence the great advantage of English manufacturers over our own. Hence it is, that under the present tariff, our markets are flooded with British pig iron, which is held at so low a price as almost entirely to exclude the product of American furnaces; and yet the iron interest languishes on the other side of the water!

The mine from which the Messrs. Ames supplied their furnaces is situated, at the summit of the mountain, about half a mile from the New York State line, and about six miles from Warwick in Orange county. At my request, one of the proprietors attended me to the place, where I spent a few hours examining the various shafts, veins and openings, and the engine and machinery employed in raising ore and pumping the water to the surface. The veins of this mine, of which there are a number, have a slant of about sixty-five degrees; the ore is strongly magnetic, is easily pulverized and easily melted. The first opening was made here during the early part of the Revolutionary war, at which time the mine was worked some few years, and the ore hauled down the mountain, where it was converted into bar iron, at a forge in Orange county. Evidences of those early workings remained, long after the old forge that converted the ore into iron, had crumbled into ruins.

For many years after the war, nothing was done with the mine, and it remained in this condition until the attention of the Messrs. Ames was directed to it some five years ago. They immediately made preparations for working it, with a large force, erected suitable buildings upon the premises,

and put up a steam engine of fifteen horse power, to raise the ore. In the meantime, the furnace and other necessary erections had been built three miles farther back, where was a never failing water power, and wood in abundance.

When the mine was left on the first of March which was a few days previous to the time of my visit, there had been eight shafts or openings made in all of which were veins of rich ore, and large enough to be worked to advantage.

From the main opening, which was the one mostly worked during the years 1848-9, about five thousand tons of ore had been taken. When left, the miners had entered a new vein, into which they had mined sixteen feet from the foot wall, without any appearance of striking the upper or hanging wall. There are in this opening three veins of ore, the aggregate width of which, as far as can be ascertained, is something over twenty-five feet. The principal vein has been sunk to the depth of fifty-one feet, and as it is now left, the bottom of the mine, and the hanging wall, present one unbroken surface of solid ore.

Another vein has been sunk to the depth of ninety feet, whence equally good ore was obtained, tho it was abandoned because the other veins could be more cheaply worked.

Judging from a hasty view of the premises around this mine, and from conversing with some of the miners who had been engaged there, it would seem that few localities could be named, where the same quality of ore can be mined with less labor and with less expense. I learned that all the work had been done for the past year by contract, and that the whole cost of raising the ore to the surface did not exceed one dollar and ten cents per ton;—this sum included wood for the engine, powder, candles and tools. Some of this ore has been used at several of the bloomery fires in the neighborhood, though most of the product of the mine for the past four years, has been sent to the furnace of Messrs. Ames. There its average yield in metal is fifty-five per cent. This proves it to be a very rich ore, though a strict chemical analysis shows a much greater per centage of iron. The iron made from this ore is looked upon as possessing superior quality for castings that require great strength. That which is melted by coal blast, has been much used for car wheels, and has a high reputation for the fine chill which it takes.

All things considered, this mine is undoubtedly one of the best within the limits of New Jersey.—It is extremely well situated for supplying the neighboring furnace at Wawayanda. Its ore is rich and works well in the furnace alone, it is easily pounded and easily melted, and the general appearance of the veins, and the working of the compass, would indicate that an inexhaustible supply yet lies below the surface.

Yours,
B. E. W.

On the Construction of Roads.

Continued from page 166.

GREATEST ALLOWABLE SLOPE.

A perfectly level road is thus seen to be a most desirable object; but as it can seldom be completely attained, we must next investigate the limits to which the slopes of a road should be reduced if possible, and determine what is the steepest allowable or maximum slope.

This depends on two different considerations, according as the slope is viewed as a descent or as an ascent, each of which it alternately becomes, according to the direction of the travel.

Viewed as a descent, it chiefly concerns the safety of rapid travelling, and applies especially to great public roads.

Viewed as an ascent, it chiefly concerns the draught of heavy loads, and relates particularly to routes for agricultural and other heavy transportation.

MAXIMUM SLOPE, CONSIDERED AS A DESCENT.

The slope should be so gentle, that when a heavy vehicle is descending, its gravity shall not overcome its friction so far as to permit it to press upon the horses. This limiting slope corresponds to the "angle of repose" of mechanical science; i. e., the angle made with the horizon by the steepest plane upon which a body will not slide of its own accord, its gravity just balancing its friction, so that the least increase of slope would overpower the resistance of the friction, and make the body descend. This "angle of repose" should therefore be the limit of the slope of a road, for on such an inclination a vehicle once set in motion would descend with uniform, unaccelerated velocity. This angle varies with the smoothness and hardness of the road, and also with the degree of friction of the axles of the carriage. On the very best class of broken-stone roads, kept in good order, and with a good carriage, it is considered by Sir Henry Parnell, from his experiments, to be 1 in 35, (or 15 feet to the mile) which should therefore be the maximum slope upon the best roads.* On such a slope a coach may be driven down, with perfect safety and complete control, at the speed of twelve miles per hour.

If the inclination be steeper than this, the danger of the descent is greatly increased, and the speed must be lessened. If it be so steep that a carriage cannot be safely driven down at a greater speed than four miles per hour, on every mile of such a slope there will be a loss of ten minutes of time equivalent to two miles upon a level. To avoid such an inclination, a road-maker would therefore be justified, by considerations of time-saving, in adopting a level route three times as long as the steep one.

When inclinations are reduced to this limit of 1 in 35, there is little loss of power, compared with a perfect level, in either direction of the travel; for increased labor of ascending is compensated in a great degree by the increased ease of descending while on a steeper slope, this advantage is nullified by the necessity of the horses holding back the carriage to resist the excess of the force of gravity.

MAXIMUM SLOPE, CONSIDERED AS AN ASCENT.

Suppose that a road is to be carried over a hill, which rises 100 feet in a horizontal distance of 500 feet, (i. e., 1 in 5) and which cannot be avoided by any horizontal circuit within the limits of distance indicated on page 166. The question which presents itself, is how steep can the slope of a road up the side of this hill be most advantageously laid out, since, by adopting a zigzag line, the road may be made as long and therefore as gentle in the ascent as may be desired? The shortest line would run straight up the face of the hill, and this line would give the least amount of labor; but then this labor for horses would be impossible: and even if possible, the horses could not draw up the whole load which they have been drawing on the other parts of the road, nor could they descend it with safety. But, on the other hand, the road should approach this shortest line as nearly as other considerations will permit, since, if it should zigzag excessively for the purpose of lessening the steepness, it would be so long as to increase unnecessarily its cost and the time and labor of travel upon it. A medium and compromise between these two evils must be found. What shall it be?

Supposing the load of a horse on the level portions of the road to be as much as he can regularly and constantly draw, his power of drawing it up an ascent will depend upon how much extra exertion he is capable of putting forth. This is not very accurately ascertained or defined, and depends very much on the length of the ascent, but may be assumed at double his usual exertion.* Now a

* On such roads Dr. Lardner considers the angle of repose to be as small as 1 in 40; while on roads not well freed from mud and dust, the friction increases the angle to 1 in 30; and on an inferior class of roads it is 1 in 20, or even deeper.

* Gayffler, p. 9.

horse drawing a load on a level road of the best character such as has been previously considered, is obliged by the resistance of the friction to exert against his collar a pressure of about one thirty-fifth of the load. If he can just double this exertion, he can lift one thirty-fifth more, and the slope which would force him to lift that proportion would be (as was shown on page 166) one of 1 in 35. On this slope he would therefore be compelled to double his ordinary exertion, and on this supposition it would be the maximum slope allowable, considered as an ascent.

These two methods of determining the maximum slope (by considering it as an ascent and as a descent) are entirely independent of each other.* If they give different results, the smallest one, or the least slope obtained, must be adopted; for, if it be disadvantageous to employ a slope steeper than 1 in 35, it must a fortiori be still more so, to employ one steeper than 1 in 30, or 1 in 20; though even greater slopes are too often met with.

Upon most of our American roads the resistance of friction would be found to be nearer one-twentieth than one-thirty-fifth, and 1 in 20 would therefore be their maximum slope with their present condition of surface. But as it is to be hoped that in this respect they will, before long, be greatly improved, in which case they would demand more and more gentle slopes, we should anticipate this desirable consummation, by giving in advance to all new lines of road at least, if not to the faulty old ones slopes not exceeding 1 in 30, which seems to be a just medium.

The maximum established by *L'administration des Pôles et Chaussées*, the French Government board of engineers of roads and bridges, is 1 in 20. This, however, was fixed, at a time when the usual surface of roads was much inferior to its present condition.

The great Holyhead road, made by Telford through the very mountainous district of North Wales, has 1 in 30 for its maximum, except in two cases, (one of 1 in 22, and a very short one of 1 in 17) and in them the surface of the road was made peculiarly smooth and hard, so that no difficulty is felt by loaded vehicles in ascending. On the old line of road, the inclinations had been sometimes as great as 1 in 6, 1 in 7, &c.

On the great Alpine road over the Simplon pass, (which rises to a height of a mile and a quarter above the level of the sea) the slopes average 1 in 22 on the Italian side, and 1 in 17 on the Swiss side, and in one case only became as steep as 1 in 13.

In the State of New York, several turnpike companies are limited by law to a maximum slope of "eighteen inches to a rod," i. e. 1 in 11. But this limit ought not to be even approached in practice.

On our "National" or "Cumberland road" the slopes in many places are much too great, and its superintendent, Cap. Wever, writes,* that "if the road had been very considerably elongated in order so effect a graduation at angles not exceeding three degrees, or 1 in 19, (and for the maximum, two degrees, or 1 in 29, would be better) the road could be travelled in as short space of time as it now is, and the power used could move double the burden it now can; thus rendering the road, for commercial purposes, doubly advantageous."

If the ascent be one of great length, it will be advantageous to make steepest the lowest portion of it, upon which the horses come with their full strength, and to make the slopes gentler towards the summit of the ascent, to correspond to the continually decreasing strength of the fatigued horses.

MINIMUM SLOPE.

A true level has been thus far considered to be a most desirable attribute, and one to be earnestly sought for, in establishing a perfect road. This

* They give identical results in this case, only because the extra exertion happened to be taken as doubled. Suppose it to be tripled. The horse can lift two-thirty-fifths more, which corresponds to a slope of 1 in 17 1/2. Horses can indeed for a short time exercise a tension of six times the usual amount, but the above assumption of double is more dependable, though it cannot be fixed with the precision which is desirable.

* Report to United States Chief Engineer, 1898.

principle must be qualified, however, by the announcement that there is a *minimum*, or least allowable slope, which the road must not fall short of, as well as a *maximum* one, which it must not exceed. If the road were perfectly level in its longitudinal direction, its surface could not be kept free from water without giving it so great a rise in its middle as would expose vehicles to the danger of overturning. But when a road has a proper slope in the direction of its length, not only do the side-ditches readily discharge the water which falls into them, but every wheel-track that is made, becomes also a channel to carry off the water.

The *minimum* slope (flatter than which the road should not be) is assumed by an experienced English engineer to be one in eighty, or 66 feet to the mile. The *minimum* established in France by the *Corps des Ponts et Chaussées* is .008, or one in a hundred and twenty-five, or 42 feet to the mile.—An angle of one-half a degree is often named in this connection; it equals one in a hundred and fifteen. In a perfectly level country the road should be artificially formed into gentle undulations approximating to the *minimum* limit.

Finally, then, we arrive at this conclusion, that the longitudinal slopes of a road should be kept, if possible, between 1 in 30 and 1 in 125, never steeper than the former, nor nearer to a level than the latter.

TABLES OF INCLINATIONS.

There being three different methods of specifying degrees of inclination, (viz. by the angle made with the horizon, by the proportion between the ascent and the horizontal distance, and by the ascent per mile) it is frequently desirable to compare the different expressions. The following tables show the values which correspond to each other.

Angles.	Inclinations.	Feet per mile.
1°	1 in 115	46
1°	1 in 75	69
1°	1 in 57	92
1°	1 in 38	138
2°	1 in 21	181
2°	1 in 23	231
3°	1 in 19	277
4°	1 in 14	369
5°	1 in 11	462

Inclinations.	Angles.	Feet per mile.
1 in 10	5° 43'	528
1 in 13	4° 24'	406
1 in 15	3° 49'	352
1 in 20	2° 52'	264
1 in 25	2° 18'	211
1 in 30	1° 55'	176
1 in 35	1° 38'	151
1 in 40	1° 26'	132
1 in 45	1° 16'	117
1 in 50	1° 9'	106
1 in 100	0° 35'	53
1 in 125	0° 28'	42

To be continued.

To the Furnace-Owners throughout the Union.

New York, March 18, 1850.

GENTLEMEN:—Will you allow me, a practical man, unacquainted with the intricacies of legislation, to submit for your consideration a proposition for protecting, independently of Congressional enactments, the great interests in which you are so deeply concerned—the manufacture of American iron?

The raw material of iron is more abundant in this country than in England: it may in fact be said to be found strewn over the surface in almost every State in the Union. The smelting furnace also is on the ground; but tho' the railroad passing its door requires thousands of tons of iron, the ore is useless, the furnace is stopped, the workmen are idle! Why is this so?—Because England can undersell you in your own market.

England can undersell you in rails because labor is cheaper in that country than in this; and that a great proportion of the cost of producing this article is made up of labor. How can this disadvan-

tage be met without reducing the rate of wages?—By introducing an article absorbing the smallest possible amount of labor.

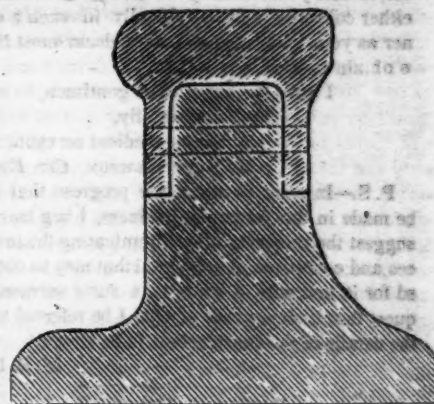
Another reason why England can undersell you, lies in the abundance of her capital. A nominal percentage on investment in plant, machinery and the like, will pay the English iron master; whereas such a profit would amount with you to positive ruin. You can however meet the difficulty by simplifying the production of rails.

In order to meet those two causes of your exclusion from your own market, that is to say, to reduce the amount of labor and to avoid the use of expensive percentage-paying plant, I propose for your consideration the employment of pig or cast iron as a material for rails.

With you who it may be presumed are aware of the capabilities of that metal, it is unnecessary to state the facts affecting the practicability of cast rails, except in a general way. The strength of cast iron, as established by the fullest investigation is given by Tredgold, Barlow, Hodgkinson, at about one-ninth less than that of wrought iron; whereas in the case of regular castings, the cost is one-third less, and in the case of pigs is even more than one-half less. Now in the case of a cast and a wrought rail of the same cost, this relation of strength and value produces a very decided advantage in favor of the casting: the upper and lower webs being very nearly the same in both rails, the difference of weight goes for the greater part to increase the depth; and as the strength increases in proportion to the square of the depth—a rail of three inches deep being 24 times as strong as a similar rail two inches deep—the strength of rails increases much more rapidly than their weight. I have before me this moment a section of a 63 lb. wrought rail, and another (assuming the cost as 1 to 2) of cast metal its equivalent in cost, the cast rail being according to well established formulæ at least four times stronger than the other. Now cast iron rails have never been tried on longitudinal bearings.—Rigidity within the limits of easy travel is absolutely necessary to keep the wear and tear of a rail to the simple effects of friction; and therefore as one-fortieth of the running foot is fixed as the working elasticity of cast iron, the charge of brittleness cannot prejudice its success on continuous bearings of timber. But in point of fact, strange as it may appear to some persons, cast iron is more elastic than wrought iron, the extension at the limits of elasticity in the latter being only one-fifteen-hundred-and-twentieth, whereas it is as high as one-twelve-hundredth in cast iron. The breaking point is certainly nearer this limit in cast than in wrought iron; but this is a very questionable virtue, seeing that a strain beyond the limit of elasticity while breaking the cast rail effects that rapid destruction of the wrought rail known amongst practical men as distinct from ordinary wear by the term 'deterioration.' In truth this accommodating character of the roller bar is the very reason why rails give out before one-fourth of their term of service. With this brief statement of the case, why gentlemen may not your castings or even your pigs be made to supersede the use of English iron for railroad purposes? As a practical engineer of some experience in the case I assure you honestly I see no reason why.

In the American Railroad Journal for the 21st July, 1849, I brought forward a rail formed by a wrought cap and a cast seat. That proposition failed to obtain any encouragement from even you who are so deeply concerned in its success. Subsequent consideration confirming my faith in the

matter, I ventured to recommend in the Railroad Journal of the 16th ult., the adoption of a simple cast iron rail. This has attracted some little notice. Perhaps in the state of opinion amongst engineers my zeal in making this proposition has however gone too far.—Every practical engineer feels the necessity of obtaining stronger and smoother joints than those of the existing system of rails; and the necessity is still more urgent, in order to avoid shocks, in the case of cast iron. The flanges contemplated in the rail described in the Railroad Journal of the 16th ult. will most probably obviate this; yet to move more cautiously in the introduction of the cast metal, it is perhaps safer in the outset, at even a partial sacrifice of purpose, to adopt the arrangement promising the smoothest joint. The following rail is contrived with that view:



This section represents an equivalent in cost to a 56 lb. rolled rail, the cap or rail (22 lbs.) being of wrought iron, the seat or continuous chair (68 lbs.) being of cast iron (rated at one-half the cost of rolled); and breaking joint with the rail is spiked in the usual way to the timber bearings. The superiority of strength of such a rail as this over a rolled rail of the same cost leads me to hope that, notwithstanding the imperfections consequent on such a mode of manufacture, the pigs might be run in this section directly from the smelting furnace.

Seventy millions of dollars will hardly reach the figure that under the present state of things will have been paid away for rails during the next 14 years by the people of this country to the iron masters of England. The rail of which the cross section is shown in the wood cut will—looking forward ultimately to a simple cast iron rail—divide this sum into two items, one of 27,000,000 for rolled, and another for cast metal of 43,000,000 of dollars. Now England cannot compete with you in producing the castings—at all events an American patent right will exclude her—and therefore the above rail if found to succeed will, while bringing business to the door of every furnace in the country, give you an exclusive trade to the amount of some three millions of dollars per annum for the next 14 years. With such a fair start the iron business of the country in all its departments cannot fail to reach, in a short time, a position of defiance to all foreign competition.

Gentlemen will you on all this showing aid me actively in this matter? Having a few days ago been consulted professionally on the subject of a rail for the Evansville and Mt. Carmel railroad, Indiana, I took occasion to urge on the President of that road the importance to the country of this chair rail; and hope to learn soon that some forty or fifty yards of it will be laid down for trial on that line. The public press has entertained this question of a cast rail favorably. The President

of a road in Virginia—showing the anxiety of the railroad interest in the case—has advocated my rail in the Railroad Journal. The matter therefore stands well so far; but in one of such deep importance to you, I must look for your active co-operation. In the ordinary course of bringing forward such things, a long time must elapse before railroad men will avail themselves of the invention; your individual influence in your several districts cannot fail, by bringing the rail into trial, watching its operation and establishing its success, to urge cast iron rails into general use within 12 months. Now, therefore, that I have shown fair ground and strong reasons for an effort in favor of home-made rails, I throw on you the duty to yourselves and your country of acting in the matter either collectively or individually in such a manner as your own judgment may deem most likely to obtain success.

I have the honor to be gentlemen,

Very respectfully,

Your obedient servant,

M. BUTT HEWSON, *Civ. Eng.*

P. S.—In order to record the progress that may be made in this important business, I beg leave to suggest the propriety of communicating the instances and conditions of every trial that may be obtained for it, and with a view to a surer success, request that in every case of trial I be referred to for the details of the construction to be adopted.

M. B. H.

Paris and France.

Paris is a great place and it deserves to be—for no other city of the world has so much been done to render it attractive. Other cities may vie with it in some one point, but taken altogether it stands without a rival—where else is to be found a Louvre with its splendid specimens of classic art? Where beside in Paris can the student find able lectures upon the whole range of topics in science and art, open to him as also the libraries, free of charge. Where can the votary of fashion more successfully worship his idol than in Paris; the very temple of the goddess—where will the lover of pleasure find more expedients for killing time than amid the balls, the operas, the theatres, the concerts, in short the never ceasing yet ever varying round of Parisian amusements. Where can the literary man, the philosopher, the statesman, find a more brilliant circle of congenial spirits than is usually congregated in this great metropolis.—Paris is in fact, the arms of France, open in generous welcome to all nations.

It is often said that it is not so brilliant, not so gay, as before the recent political convulsions—very like this is true—the palace of the Tuileries is surely not lighted now twice a week as it used to be. It is occupied by officers of the National Guard, not by a king.

It takes time to remove the old machinery of a government; make new and produce the proper adaptation of parts, so that it will work without friction. This is rapidly being done, let croakers say what they will, and France is destined to realize the idea which fills her imagination, and for which she has made so many sacrifices. She is destined to be a Republic. She now bears the name and has some of its essentials, but the grand achievement now in progress is for the future to consummate.

Americans should be exceedingly cautious how they accept as gospel truth, the slurs and sneers which the English journals cast upon what they in

derision call, Republican France. The United States are not so old yet, it is to be hoped, as to have forgotten, if they have forgotten, the very kind treatment they received from the same press while they were struggling in a similar career—and it may not be amiss to keep in mind that in spite of the strong interest which the English, particularly the manufacturing and commercial portions, which now bear sway in governments have to do us pretty near justice, we do not now escape gibes that are as unjust as they are ungenerous and uncalled for—witness the thrusts at Alabama, in a recent number of the London Times—Republican France is a nearer and therefore more dangerous neighbor than was Republican America, and of course comes in for an even larger share of abuse.

An American will not remain in Paris a week before he feels that his impressions of France, obtained chiefly through the English journals and the thoughtless sanction given them by our own, have done her great injustice. Every day his fears for her safety will subside, and a confidence will gradually gain possession of him, that the French people possessing as they do an unusual degree of public spirit, patriotism, good taste and mental acumen, with much less excitability than is usually attributed to them, will slowly yet surely work out their political salvation in spite of the very many obstacles they have to encounter.

President Napoleon is a man of no extraordinary ability. Both his acts and appearance indicate it. The French people awoke in the morning, and found themselves a republic with universal suffrage proclaimed, and a president to be selected by themselves. As yet hardly conscious whether the thing is a dream or a reality, and having no man in their confidence and sympathy, it is not surprising that the charm of their great name swayed them. Napoleon is by no means the man they hoped, yet he may prove not a bad president for France.—Elected by such an overwhelming majority, the nephew for a time imagines he can almost tread in the gigantic foot-steps of the uncle. This idea however, has already received many shocks, if it is not entirely dispelled from his brain.

Placed at the head of a great nation without sufficient ability to overawe faction and bear sway,—the safe and almost the only position left him is a conservative one. Instead of taking the initiative and attempting to lead off in some brilliant course of policy, with the view to carry the masses along with him, in which he would be sure to fail, he is found to pursue the *laissez faire* policy—just keeping the defensive attitude sufficiently to hold in check the various factions. This is the course the nature of the case would seem to require of him, and his acts indicate that he comprehends it. He is every day being more conservative—complaisant to the people, and generous, he seems to be withdrawing himself more and more from party, leaving to the deputies and other officers their full responsibility, and seeking to merit the appellation of a kind, rather than of a great president—such a course will disarm opposition by leaving it nothing to attack and fortify him in the sympathies of the people. This with the satiety of commotion, which the country has had for two years past, the mutual check, the Orleans, the Phillipist and the Socialist parties will have upon each other, will be very likely to keep affairs in a quiescent state till the present term of the president expires.—Time will thus be given the people to discuss new

measures, to make some progress in adapting themselves to the new order of things, when the elections again arrive they will be better enabled to exercise their judgments and instincts in the choice of men, to represent them.

The result will probably be a pretty general substitution of men of the people; men in their confidence and sympathy, for those who now hold the offices and who have been hangers on at court all their lives—men of ability but destitute of principle and of sympathy with the people. The great difficulty will be to find men among the people of sufficient ability and experience in a country where the distinction of classes has always been so marked, yet I have faith that they will be found, and that the great work of republicanizing France will go surely though slowly on.

The idea is not unfrequently thrown out as if there were truth in it, that the president intends to get himself proclaimed Emperor. If he wishes it, he cannot be so foolhardy as to think of making the attempt—he is not competent to do such a thing, and to make the trial would be his ruin.—The day appointed by the English journals for this great event was the 16th of December, when the review in honor of his election was to take place, and when the order for the review was countermanded, it was asserted the real cause for the postponement was want of time to get all things ready. The ill health of the president as assigned in the Bulletin—the president was not very ill, as he took his usual rides every day, but the order for a review was inconsiderately given in the first place, and wisely recalled. No very serious disturbance would probably have occurred, yet the assembly of such immense masses gives discontent, and better opportunity to operate, and should be avoided. This was undoubtedly the real reason for the recall of the orders for a review.

The ball given by the Prefectur of Police on the evening of the 10th, at the Hotel de Ville, was a splendid affair. More than 6,000 invitations were given, and more than 1,300 ladies, the beauty and fashion of Paris graced the occasion. Every thing passed quietly that day and has remained so since. Business is quite brisk; amusements have commenced their gay round, and Paris bids fair to be as brilliant and attractive the present winter, as in years gone by. It is announced that passports, the veriest humbug of the age, and one of the greatest annoyances to travellers will be no longer required in France. The thing has not yet gone into effect, but soon will. The government deserves no credit for doing what was its duty to have done long since, yet it is a favorable indication, and is something gained.

Railroad Law.

ALBANY CIRCUIT.—Homer Collins ag't. The Albany and Schenectady Railroad Comp'y.—As the public attention has been drawn to this cause, the following brief statement in relation to it may not be deemed inappropriate. The plaintiff, formerly a resident of this city, now resides at Bushnell's Basin, Monroe county. The action was brought to recover damages for a severe personal injury received by him on board the defendants' cars, on the 3d of November, 1848. The defendants were then in the habit of sending out two morning trains to Schenectady, the one only a few minutes in advance of the other. The plaintiff was a passenger in the forward train. About ten miles from the city that train had occasion to stop to correct some small matter that was out of repair about the engine. He selected a judicious stopping place on an ascending grade and a plane, affording an undisturbed range of vision eastward for a distance of three miles. Before the engineer got ready to

start, the hind train came up, and ran into the rear car of the forward train. The plaintiff, having seen the signal made by the conductor, with his handkerchief, to the hind train made an attempt to escape, and had just reached the platform when the collision occurred. His head and shoulder were considerably injured, but his left foot was permanently injured, having been caught in some way between the platforms and crushed. The injury resulted in the permanent loss of the limb, and came very near being followed by the loss of life.

The plaintiff proved the injury, and the manner in which it was effected, and rested; that being regarded, unexplained, as evidence of want of proper care and caution on the part of defendants.

The defence interposed was, first, that the defendants had exercised all the care, skill and caution that the law required; and second, that the plaintiff himself was guilty of imprudence in leaving his seat and placing himself on the platform, where the injury occurred. Testimony was introduced on both branches of the defence.

The judge, in substance, charged the jury, that the defendants, although not insurers, in the manner in which common carriers are, of property, yet must be held responsible for the exercise of all that care, caution and prudence in the arrangement and conduct of business, that human sagacity, with the light of experience and knowledge, could enable them to exercise, and that the increasing demand of the public, in regard to more enlarged facilities or greater speed, could not be allowed to diminish that care, caution or prudence. That whether these were, or were not, properly exercised in this case, was a question of fact for the jury. That if the defendants were lacking in that case, caution and prudence yet if the plaintiff, on his part, was guilty of negligent conduct, or such as was in violation of the defendants' rules, or would tend to needless exposure, he would not be entitled to recover, and that whether he had or not, was a mere question of fact for the jury.

The jury, after an absence of about an hour, brought in a verdict for \$11,000 for the plaintiff.—Joshua A. Spencer and Amos Dean for the plaintiff; B. Davis Noxon of Syracuse and Marcus T. Reynolds for the defendant.—*Albany Journal*.

Maryland.

Business of the Baltimore and Ohio Railroad.—The following are memoranda of the business of the Baltimore and Ohio railroad for the month of February, 1850:

	For passengers.	For freight.
Main stem.....	\$29,090 34	\$75,630 01
Washington bch....	19,523 29	3,925 68
	\$48,613 63	\$79,555 69

Making a total of \$128,169 32. These show an increase over the corresponding month of last year of \$17,942 61 on the main stem, and \$4,164, 53 on the Washington branch, making an aggregate increase of \$22,117 17.—*Patriot*.

To Gas Light Companies and Manufacturers of Gas Fittings.

We have been written to and inquired of in reference to the most approved method of manufacturing gas; and have had various inquiries propounded as to the best place of obtaining gas fixtures and apparatus. Several parties have recently been in this city with a view to the purchase of gas fittings. As gas is now used in many of the large manufacturing establishments, and in railroad depots, we would suggest to the different manufacturers of gas apparatus the expediency of advertising in the Journal, or in such papers as will reach the parties in question. An investigation into this subject has convinced us that every village of 10,000 inhabitants in the United States, will within a few years be supplied with gas works, and probably villages of half that size will generally introduce them, from motives of economy as well as from motives of public expediency. Parties desiring information in regard to gas works,

the comparative value of the various plans for its manufacture will find the matter fully treated in the columns of this Journal. We shall be happy to make known to the various gas companies in progress and already established, the most recent improvements and inventions in this important branch of manufactures, in its application to individual and public economy.

Wisconsin.

Milwaukee, Waukesha and Mississippi Railroad.—We have read the first annual report of this company, which is actively engaged in the construction of a railroad from Milwaukee to the Mississippi river.

The amended charter under which the company acts, was granted on the 11th day of March, 1848. The corporation was organized on the 10th of May last, the sum of \$100,000 required by the charter having been subscribed to the stock of the company. This subscription was increased at the date of the report, Dec. 31, 1848, to the sum of \$600,000. It is expected this will be increased to \$1,000,000 in April. When this amount shall be obtained it is recommended that the stock books shall be closed. With this sum expended upon a sound system of finance, it is believed that the entire road can be completed without any further contributions from the stockholders.

The grading of the first section of the road from Milwaukee to Waukesha, a distance of 20½ miles, was put under contract on the 28th of September last. The bridging and superstructure was let on the 27th of December last.

The following exhibit made upon the contract prices of work let, and estimate of iron, etc. shows the cost of this division of the work:

Grading, ballasting and bridging.....	\$44,374
20½ miles superstructure.....	27,060
Fitting and laying down track, (chairs and spikes included).....	10,250
Depois, stations, passenger and freight cars.....	38,000
Engineering, superstructure, etc.....	12,968
80 tons iron, a 50= \$4,000 per mile.....	85,000
2 first class locomotives.....	15,000
Total.....	\$232,652

or \$11,349 per mile, all expenses included.

The price to be paid for grading and bridging shows a remarkably easy route. The maximum grade going west is 25 feet to the mile, and only 6 going east. Its curves are equally favorable. On the whole section under contract there is not one deep cut nor high embankment, and not a yard of rock excavation.

The rail used is to be of the H pattern. The gauge of the road is 6 feet, the same as the New York and Erie. This section of the road is to be completed for use in the month of August next, in season to secure the transportation of the present year's crop of produce.

With the low cost of the road, and the immense amount of transportation between such important termini, Lake Michigan and Mississippi, the company anticipates a very large revenue from the work. We have no doubt but that its stock will prove good investment for capital, and sufficient to justify the taking the stock by any one who wishes to receive a good return for his money. But the great object and use of the road are the facilities it will give to business, and as a natural result to all kinds of property. The construction of this road will stimulate the growth of Milwaukee to an extraordinary degree, as it will render it one of the shipping ports of a great part of the upper Missis-

sippi valley. It cannot be pushed with too much energy and zeal for the interest of Milwaukee.—The railroad, in the west particularly, is now regarded as one of the necessities of life; and in the new States their construction is commenced as soon as the primary wants of existence are provided for. It is one of the items in the arts of life which the settler carries with him from the older States, and is destined to be the ordinary and common way for the use of the whole population of this great valley.

Lake Superior.

By the advertisement of Messrs. McKnight and others, in another part of our paper, it will be observed that the facilities of communication with the upper lakes are to be greatly increased the coming season. From our acquaintance with Mr. McKnight, and our confidence in his energy, perseverance and integrity, we are pleased to learn that he has been able to put so good a boat as the *London* on the route from Detroit to the Sault, and to make arrangements for her connecting regularly with the propellers now on the upper lake. We are gratified also to learn that a charter has been procured by Mr. McKnight for a plank road across the portage, and that this is likely to be constructed the present year. A wharf too will be prepared on the opening of navigation for the accommodation of vessels at the head of the portage, thus lessening the difficulties and delays heretofore encountered in the reshipment and discharging of cargoes. All this indicates a firm confidence in the resources of the mining region, in which we fully concur. We heartily wish all success to the enterprise of this transportation company, but hope the day is not far off when the construction of a ship canal by act of Congress, will lead to some modification of their arrangements still more conducive to the convenience of the public. We propose to try this line soon after the boats commence to run; and as our occupation will probably detain us at the mines most of the season, we shall continue the series of articles upon the Lake Superior region commenced the last summer.

Ohio—Her Wealth and Resources.

The appendix to the report of the Auditor of this State furnishes the following official information:

Acres of land.....	23,768,835
Value of lands.....	\$264,661,957
Value of towns.....	71,177,354
Value of personal property monies and credits.....	99,235,476
Total value of taxable property.....	430,839,865
State tax on property.....	1,296,547
County, school and township taxes.....	1,462,721
Road tax.....	232,152
School houses and other special taxes.....	495,436
Total taxes on grand list of 1849.....	3,631,878

Railroad Stocks held by the State.

Mad river and Lake Erie.....	\$393,050
Mansfield and Sandusky.....	23,333
Little Miami.....	121,900
Stock dividends on above.....	71,300

Total amount held by the state..... \$520,183

Canal Stocks held by the State.

Cincinnati and White Water canal.....	\$150,000
Pennsylvania and Ohio.....	420,000

Total..... \$570,000

The total amount of turnpike, railroad and canal stocks held by the State is \$3,011,858. Dividends on turnpike and canal stocks last year—\$38,049.

The total amount of capital bank stock paid in, in all the banks, is \$6,486,817, and the amount of tax paid by them to the State the past year was \$52,862 59.

AMERICAN RAILROAD JOURNAL.

Saturday, March 23, 1850.

The Pacific Railroad.

The New York Tribune, of the 15th, 16th, and 18th instant, contains elaborate editorials upon this great work. In the discussion of this subject, we have made it a point to avoid controversies with our cotemporaries, but as the Tribune is known to be the oracle of a very large class of our people, and as many of the positions taken by the editor are without the least foundation in truth, though stated in such a plausible and specious manner, as is well calculated to mislead, we shall step out of the prescribed rule, for the purpose of exposing some of its absurdities.

We agree with the Tribune, as to the necessity of this road, and the importance that the appropriate steps should be immediately taken for its commencement. It is not worth the while therefore to spend much time in discussing the moral or material results that will flow from it, or the extent of its capacity to act as an agent of commerce in the transportation of merchandize; and we only introduce some extracts from this part of the argument of the Tribune, to illustrate its knowledge of the cost of transportation by railways. In relation to this, it says:

"But the great result which must with certainty follow the completion of this road is the transfer to it and to the United States of the trade of Asia.—The commerce between Europe and the East will pass over it. That trade has ruled the world of Commerce and rules it still. England is supreme, because she has monopolized it. That monopoly makes London the capital of the commercial world. Build the railroad, and the same supremacy is infallibly transferred to the United States, and to New York. Thus we shall become the carriers of the world, and the wealth of every clime will pay its tribute to American Labor. But this is not all, if it were, we should far less earnestly invoke the advent of that day when the rails, beginning at the Atlantic and traversing a continent, shall reach the shore of the Pacific. There are other and higher advantages to be reaped from this vast enterprise than a mere increase of our transportation. A great part of the Asiatic products which will then cross our territory will be paid for in American products. The vast grain growing region of the West will then have China for a market. Our Corn, which at present on its native soil is comparatively valueless, will then cheaply feed the now starving millions of that populous empire, who will thus become the steady customers of the farmers of the Northern Mississippi Valley. Thus will despoiled and pauper Asia be brought into direct and constant relations with republican America. The world will be enriched, revolutionized, transformed."

After the construction of this road then, the corn of the Mississippi Valley is to cheaply feed pauper Asia. Let us see how cheaply. The distance of the centre of Mississippi Valley from San Francisco, by the route advocated by the Tribune, cannot be less than 2,300 miles. The average cost of transporting freight on the Massachusetts road for the year 1848, was 17 mills per ton per mile. It would cost at the same rate \$39 per ton, or \$1 19 per bushel, allowing 33½ bushels with the tare to the ton, to place this corn at San Francisco, allowing this corn to be worth 32 cents, at the points of delivery on the road, we have \$1 50, as its cost at San Francisco. To transport this corn from this port and deliver it to the pauper population of Asia, must cost at least 50 cents more, making a total cost on reaching the consumer of \$2 00 per bushel! Pretty expensive food this, for paupers, who can without doubt, buy twice as much, the products of their own soil, at one half for one quar-

ter the same price. Where these paupers of Asia are to get the means to pay for this Mississippi corn, from the sale of which we are to become vastly rich, or how they shall be induced to pay twice as much to us for food as it can be obtained for from among themselves, we are not informed. In one point we fully agree with the Tribune, when the results claimed by it shall take place, the world will most certainly be transformed.

Again, the Tribune is equally happy in discussing this question of vote. Upon this question it says:

The necessity of a northern rather than a southern route is a natural one. *It grows out of the form of the earth.* Every body knows that the earth is larger round at the equator than at the poles.—Consequently the farther from equator and the nearer the poles is the line in which we go around it, the shorter the distance. From Charleston, S.C.—we take a southern city as an example—to San Francisco by a route as far north as circumstances will allow the road to be built, is 2,916 miles; while by the southern route, running through Memphis, El Paso and along the Gila, it is 3,583 miles.—Starting from New York, the advantage of the northern route becomes greater. Of course the Panama, Nicaragua and Tehuantepec routes are still longer than by the Gila, for the reason that they are further to the south.

"Here's wisdom," as Capt. Cuttle says in *Dombe*. "Here's an opinion as is an opinion." The earth is a sphere or nearly so. Now we had always supposed the shortest line between two points in a sphere to be a direct one. A direct line from Charleston to San Francisco passes a little south of Memphis. Consequently, the shortest line between the two must run south of this last named point. But the Tribune says no—that it is 667 miles nearer to make a circuit north of Memphis, in your way to California, than it is to take the direct route. If the principle laid down by the Tribune is correct, then the shortest possible route from Charleston to San Francisco is by way of the north pole! For here the distance round the globe is nothing at all!

Having established this great principle in mensuration, the Tribune then goes on to state the consequences that result from it as follows:

And if we take for our starting point London, the present focus of the East Indian trade, we shall find that none of these southern routes will be able to change the course of eastern commerce. The Nicaragua canal offers beyond doubt the greatest inducements to such a change for the reason that it will carry ships through from ocean to ocean without the need of shifting their cargoes. But here again the form of the earth and the currents of the regular winds decide that the Asiatic trade will not be taken through the canal. Ships will be able to sail from London to China around the Cape of Good Hope in some 20 days less on the average than it will require to make the passage by way of Nicaragua, so that, immense as will be the tonnage passing by that route, ships loaded at Canton or Calcutta will not increase it. Moreover, it is plain that if it all went that way the United States would only indirectly profit by it. Our products would not pay for the goods, nor our labor be employed in their transportation. They must pass directly across our territory and our surplus production must pay for them or we fail of the great end which is so plainly within our reach.

Assuming the distance from New York to San Francisco by any feasible railroad route at 3,500 miles, and taking the cost of transportation at 17 mills per ton per mile, it will cost \$59 50 per ton to transport merchandise from San Francisco to New York. Now if the Nicaragua canal is completed, as it is admitted by the Tribune it will be, we submit whether goods could not be transported cheaper by this route than by railroad across the

continent? Would it not be cheaper for a ship with 1000 tons freight, to take the old route by the Cape of Good Hope, or the new route by the proposed canal, than to break bulk at San Francisco, and pay \$60,000 to forward its freight to New York, and there to reship it to London? We think that there can be no question of this, and we presume that no person who understands any thing of the cost of transportation by railroad believes for an instant that the heavy freight will ever leave the ship's hold after leaving Canton or Calcutta, till it is deposited in the warehouses of New York and London. We do not believe that the rest of the world is going to make our territory the thoroughfare for the transit of their merchandise at an expense of transportation two or three times greater than its cost on the ordinary route, simply to enable us to levy tribute upon it. The Tribune may believe this, but we must beg to be excused.

We have given the arguments by which the Tribune satisfactorily to itself, has settled the question of route. It now comes to the various plans for construction. These are stated to be three, as follows:—

- I. That the general government shall build the road. This plan is advocated by Col. Benton, Lieut. Maury, Mr. Loughborough and others.
- II. That the government shall issue \$98,000,000 in stock and lend it to a company which has \$2,000,000 of its own money, to help that company build it. This is Mr. Degrand's or the Boston Plan.
- III. That Congress shall set apart a strip of wild land sixty miles in width, extending from Lake Michigan through to the Pacific, for the building of the road, and authorise Asa Whitney to construct it, and pay therefor with the proceeds derived from the sale of the land.

The first two of these plans the Tribune disapproves, and supports that of Mr. Whitney, and goes on at length to defend it from the objections made to it. From this portion of the argument we quote as follows:

Another objection is that the scheme is a great land speculation. This is a mistake. Mr. Whitney does not by it become the possessor of a single acre of land, and gains no speculating advantages. The plan is this: The land is set apart, sixty miles in width; Mr. Whitney begins the road, and as soon as 10 miles are completed the Commissioner of the Land Office sells half the land—that is, of the 10 miles he sells five; no part of it becomes Mr. Whitney's property unless he buys it like any other citizen, he having no prior right of purchase or any other superiority over others.

The exact contrary to the above is the truth.—That there may be no mistake about this matter, we quote from the bill which Mr. Whitney attempted to get through last Congress, and which embodies his whole scheme, [vide his pamphlet, p. 84, sec. 4.]

And be it further enacted, That no part of the lands embraced by the provisions of this act shall be applied under its authority, and for the objects specified in the same, except under the following terms and conditions, to wit: Said Whitney shall first survey, fix upon, and locate the route for said road to a suitable bridging place on the Mississippi, if the road commence on or near Lake Michigan, or, if commencing at the other point, to such distance as shall be necessary to secure the land for the purpose aforesaid. He shall also commence the work with machinery, preparations and arrangements for its continuance, and complete ten miles of road, according to the best plan of construction of railroads in the United States at the present day, with a single track, on a gauge or width of not less than six feet, and with an iron rail of not less than sixty-four (64) pounds to the yard, at his own expense, and to the satisfaction of the commissioner hereinafter directed to be appointed, to be charged with the interests of the United

States, who shall certify to the commissioner of the General Land Office that said road has been substantially made and constructed, and in all respects in conformity to the requirements of this act, and that said road is progressing; and thereupon said Whitney, and his assigns, shall be entitled and fully authorized to sell at public or private sale, the first five miles of the breadth of said land so set apart for the construction of said road, and one-half part of the equivalent lands selected in lieu of what may have been sold; and the Commissioner of the General Land Office shall cause patents to be issued the same as for lands sold by the government; said patents to be delivered to the said Whitney, for the purchasers under contracts by and with him; and the title shall be the same as if they had purchased directly from and paid to the government for the lands.

After this we presume that the Tribune will withdraw the following flourish about free soil:

"Opposed as we are from principle to traffic in land, and earnestly as we contend for the freedom of the public domain, we see no sufficient reason for refusing to devote this track of sixty miles wide to this use. * * The only thing in this connection that we should insist on in framing the bill which makes the grant for the road, would be a proviso that no man should become the owner of more than one lot of land of a specified size, and that no man owning any other land could become the owner of any of this. With such a proviso, there could be no danger of land speculation.

If Mr. Whitney is rich enough to build one half of the road he may be the sole owner of a strip of land 30 miles wide from the Mississippi to the Pacific; something of an estate for a democracy we think. He builds ten miles of road, and is entitled to 150 square miles of land. He sells to A. B. to-day, and A. B. reconveys to him to-morrow. The requirements of the law are complied with, and Mr. Whitney is the owner of the whole. Great free soil movement this.

Now we think it not very difficult to show, that in Mr. Whitney's scheme is projected, and if carried into effect would prove the greatest speculation yet attempted in this country. Let us commence first with the Pacific side, and see what he could do there.

Mr. Whitney must in the outset build ten miles of road, and commence upon the next ten, as a condition precedent to the grant to him of five miles by sixty. He commences at Puget Sound and builds ten miles, and then commences the second section. The land commissioner then grants to him, or his assignee, a strip of land following the coast, sixty miles by five, which at once transfers to him the Harbor, and all the adjoining lands. After the patents are issued, and the lands have all quietly found their way back into Mr. Whitney's hands, he gradually comes to the conclusion that it will not pay to push much further in this quarter. His expenses increase as he leaves the coast. The lands which he is entitled to take as he goes along are becoming less valuable, and if he does not stop there is danger that they will not pay for the work as he goes along, that if he proceeds further, he will have to draw upon his first five miles. He has already got whatever is of value. He has given no pledge to Congress that he will go one step further than it suits his interest to go. Why should he go on and waste what he has already made in pushing a work which may turn out to be impracticable. He very prudently knocks off work, the very moment he cannot make money by going ahead. As far as he has gone he has made an immense fortune. He has secured to himself the most valuable and magnificent harbor on the Pacific coast. He has got into his pocket the very means with which it was expected that he would continue and

build the road, and government finds too late that it has been most essentially sold.

So on the eastern side. The lands decrease in value, and the expenses of constructing the road increase just in proportion as he leaves the Mississippi. But Mr. Whitney, by his own admissions, must build 800 miles before he can avail himself of more than one half the land set apart for his road; that is, a strip of land 30 miles wide on the line of the road must build it 800 miles. Now if this belt would furnish the means for this distance, the lands for the few first hundred miles must be worth two or three times as much as the cost of the road so far. Their value diminishes, and the expense of building the road increases, just in proportion as he leaves the starting point. In the progress of the work, therefore, he will reach a point where a given section of land yields only enough to build the road running through it. If he goes beyond this point he must draw from the surplus already accumulated from the lands sold. Allowing his plan to be a feasible one, this surplus must amount to millions. How should we expect a man to act in such a case? He is under no obligations to proceed further. If he goes on he may beggar himself. If he stops he can save all he has accumulated. Is it wise to put the success of the road to such a test as this? It will be directly against Mr. Whitney's interest to go beyond a certain point. Ought we not to have some guarantees from him, that all the proceeds of the land shall be appropriated to the work? Ought not the obligation to be mutual?—In fine, in dealing with Mr. Whitney, should not government adopt the same precautions, and be governed by the same rules, that business men observe in dealing with each other? If the first ten miles gives a surplus of \$100,000, let this surplus go into the U. S. Treasury, to be drawn out for the construction of such portions of the road as may run through sections that are not worth enough to build it though them.

But, says the Tribune, suppose Mr. Whitney makes this sum and then abandons the work; government is no worse off for the transaction. It has made as much money, and got ten miles of railroad into the bargain. The proper answer to this is, that if government is actually going into the construction of railroads for the purpose of making money out of its land, let it drive the best bargain it can, and put the road out to the highest bidder, and make \$200,000 instead of half that sum. Again the Tribune says:—

It is also said that by this scheme the road will never be completed. That we suppose depends on the practical means, the capital, and the number of hands employed and the skill and energy with which they are directed. As for capital there is not likely to be any difficulty; arrangements can easily be made to obtain all that is wanted at the lowest rates; as for hands Europe has them in superabundance to furnish. Last year 230,000 emigrants entered this country by the port of New York alone; and it is not too much to say that there were 400,000 in all. the number will be larger this year. Indeed there is scarcely any limitation to the swarms that might be supplied if there were any special demand for their labor. Begin this road and there certainly will be no trouble in bringing on 100,000 every year to work on the road and then settle as farmers, gardeners and mechanics beside it. With such a force the undertaking may be finished in fifteen years from its beginning.

The Tribune's estimate then is, that it will require the labor of 100,000 men fifteen years to build the road. Now we would suppose the pay of these men would average one dollar a day, embracing in this all the expenses of the work. This would re-

quire an expenditure of \$36,500,000 annually, or a total of \$547,500,000!! This sum is only \$447,500,000 greater than Mr. Degrand's estimate, and \$487,500,000 greater than Mr. Whitney's. We do not see any difficulty in obtaining a sufficient number of laborers, but we are somewhat sceptical about obtaining this amount of money; at least until increased confidence shall be put in "railway securities."

The inventors and proprietors of the Boston Plan went into a labored calculation of the time that it would take Mr. Whitney to build his road; and the result of their investigation was, that it would take 1750 years to complete it on his plan. Many persons thought that they stated the time much too low. We were however willing to take a much shorter time. We reasoned in this manner. The lands on the line of the road are to furnish the means. Now how much will the commencement of this road increase the sale of the public lands.—We are willing to allow that it would increase the sale one-fourth. The receipts from this source is estimated by the Secretary of the Treasury for the current year at \$1,700,000. Taking this as the probable yield for some time to come (not taking into account the newly acquired territory), the receipts applicable to Mr. Whitney's road would be \$425,000, or in round numbers 400,000 annually, a much greater sum we honestly believe than the lands set apart for this road would produce. With this sum it would take Mr. Whitney 150 years to build his road.

To show that we made a liberal estimate of receipts from land along the route of the road we give the following description of them from Mr. Whitney's pamphlet:

Of the entire route, 1,200 miles is without timber even sufficient for the construction of the road, though with an abundance of coal; a great part of the distance without stone or any material for such a work, or for the settlement of the country; and the road must be the only means of transit, as it would progress, for its own material, as well as for the material for buildings and fences, for the settlement of 1200 miles of the route.

We should like to have the Tribune inform us how rapidly the country is to settle where all the materials for building, such as wood, stone, etc., etc. are to be transported one thousand miles over a railroad, and how much such land would be worth, destitute of all the natural additions to make it valuable? And who could be induced to leave the well situated, well timbered, and equally fertile lands, of which there are an abundance in the 'States,' and place himself so far beyond the bounds of civilised life. This very statement of Mr. Whitney shows the utter absurdity of his whole plan.

Since the above was written, Congress has summarily disposed of Mr. Whitney's scheme by refusing to print the report of the Committee on Roads and Canals in its favor, by a strong vote. This is the last of it, and it will be forgotten as suddenly as it rose in favor. "It went up like a rocket and came down like a stick." It gained favor because it was specious, and it lost it because this was its only merit. We earnestly opposed it in face of the united support it received from nearly the whole press of the country, and think we may claim to have done something toward bringing the public mind to view it in a true light.

To Contractors.

THE Election of Directors of the Queenston Suspension Bridge Company having taken place, the Company are now prepared to receive Plans for the Bridge and Tenders for its erection. All communications to be directed, GILBERT McMICKEN, 1ml1

Great American Engineering

AND MECHANICAL WORK, just published in a medium folio, 75 cts.

Part III of "Specimens of the Stone, Iron and Timber Bridges, &c. &c. of the United States Railroads." By George Dugan, Architect and Civil Engineer.

The present part contains beautifully executed plans, elevations, sections and isometrical views of the elegant timber arch 275 feet span, at Cascade Creek, Pa. on the line of the N. Y. & Erie R. R., and of a plank bridge 100 feet span across the Mahawk River near Rome, on the line of the U. and S. R. R. with the specifications, estimates, bills of timber, iron, etc.

N.B.—This work is published by subscription of the most eminent in the engineering profession of the U. States, and will be completed in 12 parts, at 75 cents each to those who remit their names and subscriptions before the 1st May next, after which the price will be raised to \$1 per part.

To those making a present remittance of \$5, and the remainder \$4, when they have been supplied with the first six parts, the work will be forwarded regularly as published. Parties remitting \$9 shall receive it monthly **POST-FREE** in any part of the United States.

"It is a work that was a great desideratum, and must prove of great benefit to the engineering profession generally, and especially to the tyro in practical engineering and mechanical knowledge; in truth it strikes us, that it would require years of labor and patient toil on the part of a young engineer to prepare the drawings, and collect the information that will be embodied in this work, and can now be secured for the trifling sum of \$9."—[Scientific Amer. March 16, 1850.]

In connection with this subject (Iron Railroad Structures) we take occasion to call attention again to Mr. Dugan's valuable and expensive publication, exhibiting drawings, with full descriptions of the various stone, iron and wooden bridges, viaducts, tunnels, culverts, etc., of all the Railroads in the United States. Mr. Dugan is an accomplished Architect and Civil Engineer, who came from Ireland to this country to exercise his profession; but finding railroad construction here, in many respects, different from that he had been accustomed to in Europe, he applied himself to the study of our system; and the fruits of his researches and investigations embodied in this work, are well calculated to meet the exigencies of engineers, and to assist draughtsmen, bridge builders, mechanics and students. The work will be supplied to subscribers only, in 12 parts, at 75 cents each.—[N. Y. Journal of Commerce, Feb. 14, 1850.]

Published by **GEORGE DUGAN**,
172 East Broadway, New York.

TO CONTRACTORS.

NOTICE is hereby given, that from 30 to 60 miles of the Orange and Alexandria Railroad will be ready for examination between 1st and 15th of April next. The road passes through a very healthy and fertile region, and embraces an amount of work every way worthy of the attention of able and experienced men.

The Company prefers to let the whole work of construction in contracts of not less than 30 miles, and for that purpose parties wishing further information are invited to call at the office in Alexandria.

The bids will be made on a basis of payments in cash to the amount of 85 per cent, and the remaining 15 per cent in the stock of the company. They must be sent to this office not later than the 15th day of April next, to be submitted to the meeting of the Board of Directors to be held on the 18th of the same. By order of the Board.

T. C. ATKINSON,
Chief Engineer.

For the information of parties at a distance. It is well to state that the *Orange and Alexandria Railroad* is about 90 miles long, and extends from Alexandria through Fairfax, Prince William, Fauquier, Culpeper and Orange counties to Gordonsville, a point on the completed portion of the *Virginia Central Railroad*, formerly called the *Louisa railroad*.

An inspection of the map will show that its connections promise to make it as valuable a thoroughfare as any in the Union.

Railroad Iron.

THE Undersigned, Agents for Manufacturers, are prepared to contract to deliver Rails of superior quality, and of any size or pattern, to any ports of discharge in the United States.

COLLINS, VOSE & CO.,
158 South St.

New York, November 17, 1849.

Henry J. Ibbotson,
IMPORTER of Sheffield and Birmingham Goods.
Also, Agent for the Manufacture of Telegraph Wire.
218 PEARL ST., NEW YORK.

Spikes, Spikes, Spikes.

ANY person wishing a simple and effective Spike Machine, or a number of them, may be supplied by addressing
J. W. FLACK,
Troy, N. Y.
March 6, 1850.

**FOWLER M. RAY'S
Patent India-rubber Railroad
CAR SPRING.**

Troy, February 27, 1850.

We have been using your India-rubber Car Springs for nearly two years—and we take pleasure in saying that in our opinion the rubber has to a certain extent already, and may eventually entirely supersede all other Springs for Railroad Car purposes. We now use it entirely for Draw Springs and Bumpers, considering it better and lighter than steel.

During our two years' experience in the use of it, we have not known any to lose their elasticity, or fail in any way; and we cheerfully recommend the rubber for railroad car springs. Very respectfully,
EATON, GILBERT & CO.

Boston, March 5, 1850.

In answer to your enquiry about India-rubber Springs, I have to say that we have used them to a considerable extent on both freight and passenger cars, and also on several of our tenders; and I am very well satisfied that they answer all the purposes for which they are intended. I believe the India-rubber will soon supersede all other springs for cars and tenders.

Yours truly,
S. M. FELTON,
Supt. Fitchburg Railroad.

Office of the New Jersey Railroad Co.,
Jersey City, March 7, 1850.

This is to certify that we have had Mr. F. M. Ray's India-rubber Springs in constant use under our cars, and as Bumper Springs for upwards of two years, and they have in every way given perfect satisfaction.

The present form of spring we deem far superior to the form of Disk, having used both forms, although we have none of those made in Disks at present in use. We take pleasure in recommending these springs to all railroad companies.

J. P. JACKSON, Vice Pres.
New Jersey Railroad and Trans. Co.

Roxbury, February 28, 1850.

In compliance with your request, I take great pleasure in stating the result of my experience in the use of "Ray's Patented Vulcanised India-rubber Car and Engine Springs." We have used them nearly two years, and never had one fail in any way. The cold weather does not affect them, as it has other rubber springs we have used.

With sixteen years' experience as superintendent of machinery on the Boston and Providence railroad, I take pleasure in saying that your springs are the best we ever used, or I ever saw used elsewhere. We have 20 cars rigged with them, of which I can say that the springs are as good now as when first applied. I put 24 lbs. of the rubber under the forward end of one of our heaviest engines, taking off 250 lbs. of steel springs—it has been in use 18 months, and is in as good condition now as when first put under the engine.

Very respectfully yours,
GEO. S. GRIGGS,
Supt. of Machinery, Boston and Prov. R.R.

Supt. Office N.Y. & H. R.R.,

New York, March 8, 1850.

This is to certify that we have used the Rubber Springs manufactured by Mr. F. M. Ray for the past twenty months, "both for Passenger and Freight Car Springs and Bumpers, and of different sizes," and have in every case given entire satisfaction, and I consider them the best spring now in use.

M. SLOAT, Supt.

Jersey City, March 9, 1850.

This is to certify that the present form of Mr. F. M. Ray's India-rubber Car Spring I consider far superior to the form of Disk, having used both forms. I take pleasure in recommending these springs to all railroad companies.

DAVID H. BAKER,
Foreman of Car Shop of N.J. R.R. & Trans. Co.

Harlem R.R. Depot,

New York, March 7, 1850.

This is to certify that we have used Mr. F. M. Ray's India-rubber Springs for over eighteen months, and find them to be easy and durable, and recommend them to railroad companies as being superior to anything we have tried.

J. M. SMART,
Foreman at 42d St. Depot.

February 25, 1850.

From practical observation of the use of the India-rubber Car Springs, manufactured and sold by your company, we are entirely satisfied in their application, and do not hesitate to recommend them as elastic, durable, requiring no repairs for years, and retaining their consistency during all extremes of weather. We have applied them for the past two years, and consider them superior for all railroad purposes.

Yours truly,

OSGOOD BRADLEY, Car Builder, Worcester.
J. H. WATSON, do. Springfield.
DEAN, PACKARD & MILLS, do. do.
DAVENPORT & BRIDGES, do. Cambridgeport.

Fall River, February 2, 1850.

In answer to yours of the 20th ult. I would say that this company has for some 10 or 12 months past been using "Ray's India-rubber Springs." We have applied them to both passenger and freight cars with uniform success. They have invariably preserved their elasticity and consistency through all the extremes of weather; and we are now applying them whenever the steel spring fails. I am well satisfied that they are particularly adapted for railroad purposes.

Very respectfully yours,
GEO. HAVEN,
Supt. Fall River Railroad.

New York, March 11, 1850.

I have used the Patent India-rubber Spring purchased of Mr. Ray, upon the cars of the New York and New Haven Railroad, and have found them efficient and economical; and when applied to the axles and draw springs, believe them to be quite equal to any in use. I have found a combination of these springs with a steel spring under the transom beam a very satisfactory arrangement, and am now using this plan in all new cars.

Yours respectfully,
ROBERT SCHUYLER.

Office of the Boston and Lowell Railroad,
Boston, March 8, 1850.

EDWARD CRANE, Esq.,
Agent New England Car Co.

Dear Sir—In reply to your note, it gives me pleasure to state, that the results of using your India-rubber Springs on this road have been altogether favorable.

They retain, so far as has been observed on this road, their elasticity in any temperature; and are equally unaffected by the oil, with which they are necessarily brought into contact, and which I at first apprehended might have an injurious effect.

Though not in my opinion so easy as the "Air-spring" in its perfect state, they are much more easily kept in order, (indeed they require nothing in the way of repairs,) and they last much longer, so that I am now substituting them for "air-springs," wherever these have been used under our cars.

Respectfully yours,

WALDO HIGGINSON,
Agent Boston and Lowell Railroad.

Office New Jersey Railroad Co.,
Jersey City, March 8, 1850.

FOWLER M. RAY, Esq.,

Dear Sir: In answer to your enquiries respecting the operation of the Vulcanised Rubber Springs, purchased by our company from you some two years since, I reply that they are superior to any spring in use, (that I have either seen or heard of).

The improved form of your spring, consisting of a solid piece of vulcanised rubber with bands on the outside, is far superior to your first form, consisting of disks of rubber with metallic plates interposed.

The last named form was tried, if you recollect, at a much earlier period; and then was replaced by your last form.

I have no hesitation in saying that your springs have given entire satisfaction, and most cheerfully recommend them to railroad companies throughout the country for the following reasons:

- 1st. The cost is 30 per cent. less.
- 2d. Saving of weight on each car of 8 wheels from 700 to 800 lbs.
- 3d. Less care and attention is required, as they are not liable to get out of repair.
- 4th. A great saving is secured in the wear and tear of the cars and rails from their great elasticity.
- 5th. The freedom from noise.
- 6th. There is greater safety in case of accident, as they cannot be broken.
- 7th. The comfort of passengers is enhanced sufficiently to pay the expense, waiving all the other reasons that I have given.

Should this fail to satisfy any person enquiring, you are at liberty to refer to me, No. 150 Washington St., Jersey City.

Yours respectfully,
T. L. SMITH, Supt.

Railroad Iron.

OF ANY PATTERN AND WEIGHT,
Of a Favorite Brand.
And deliverable in Bond, or Duty paid, at any Port of
the U. S., contracted for on favorable terms, by
CHARLES ILLIUS,
20 Beaver St., New York.

Pig and other Iron also contracted for. Sole Agent
for "Barter's Machine and Burning Oil"—particularly
adapted for "Railroads" and other Machinery—
Preferred to Sperrin by the many now using it, and 25
per cent. cheaper.

United States Railroad Guide and Steamboat Journal.

CONTAINING OFFICIAL TIME ADVERTISEMENTS,
Tables of Stations, Distances, Fares, Time, etc.,
with much miscellaneous matter for the travelling public.
Price 12 cents a copy. Yearly subscription \$1.
Published at 43 Ann street, New York.

LAKE SUPERIOR LINE. Cleveland and Detroit,

TO
SAULT STE. MARIE, CARP RIVER, COPPER
HARBOR, EAGLE RIVER, ISLE ROYAL,
ONTONAGON AND LA POINT.

The Proprietors of this line having added largely to
their facilities for transportation on this route, will be
prepared to ship Goods to any part of Lake Superior
during the coming season, and contract for the delivery
of Copper Ore to either Boston, New York, or
Pittsburg, being connected with the Troy and Western
Line, from Detroit to New York, and a Daily line
of Canal Boats

FROM CLEVELAND TO PITTSBURG.

Lakes Huron and Erie.

For this portion of the route, the Proprietors are fit
ting up a large Boat, with a powerful low pressure
engine, and a spacious upper cabin, with state rooms,
to take the place of the Franklin, which will leave
CLEVELAND every Monday Evening at 7 o'clock,
and DETROIT every Tuesday Afternoon at 2 o'clock,
going to MACKINAW and the BRUCE MINES,
and arriving at SAULT STE. MARIE on Thursday
morning. The Franklin will leave Detroit every Friday
for Mackinaw and Sault Ste. Marie, via the Bruce
Mines. For the transportation of heavy masses of
Copper, a Propeller will make trips as occasion may
require.

Lake Superior.

Mr. McKnight, one of the Proprietors, is construct-
ing a Wharf to the Channel Bank, at the head of the
Portage, which will enable them to load their Propellers,
NAPOLÉON AND INDEPENDENCE, with
but 24 hours' detention at Sault Ste. Marie. One of
the Propellers will leave every Friday, making a trip
through the Lake, touching at Carp River, Ontonagon
and Isle Royal.

The great expense incurred in building wharves to
facilitate business, it is hoped, will entitle the Propri-
tors of this Line to Patronage. Goods shipped by
either G. WILLIAMS & CO., or S. P. BRADY,
Agents, Detroit, will be receipted through to their des-
tination on Lake Superior. Letters addressed to S.
McKNIGHT, Detroit, or Sault Ste. Marie, will re-
ceive attention. Supplies will be purchased and deliv-
ered at any point on Lake Superior, on the best pos-
sible terms, and all orders filled with articles of as good
quality as the market affords.

Canada Line.

To facilitate the forwarding of Goods for the Cana-
da Companies, a connection has been made with
PARK & CO., managing owners of the Propeller
Earl Cathcart, forming a direct line from Montreal to
the Bruce Mines and Sault Ste. Marie. Goods sent
by this line, care of PARK & CO., Amherstburg, or
CHAS. HUNT, Esq., Windsor, will be immediately
forwarded, and at prices decidedly to the advantage of
parties in Toronto or other Canadian Ports.

S. McKNIGHT,
J. R. LIVINGSTON,
P. B. BARBEAU.

January, 1850.

AGENTS.

G. Williams & Co., } Detroit.
S. P. Brady,
P. L. Sternberg & Co., } Buffalo.
Charles Hunt, Windsor.
Park & Co., Amherstburg.
W. A. Otis & Co., } Cleveland.
Crawford and Chamberlain,
Rice, Clapp & CO., New York.
W. M. Gorrie, Toronto.

STABILITY—SECURITY—PERPETUITY. Mutual Life Insurance Co. of New York.

No. 35 WALL STREET.

A MILLION OF DOLLARS

Securely invested in Bonds and Mortgages on real
estate in this city and Brooklyn, and stocks of the
State and City of New York and United States Gov-
ernment.

This fund is rapidly increasing, by a widely extend-
ed and prosperous business.

The company declared a dividend of profits of fifty-
two per cent. on all existing policies on the 31st of
January, 1848.

All the Profits are Divided Among the Insured.

The premiums are payable in Cash annually, semi-
annually, or quarterly, interest being added on the de-
ferred payments.

The cash principle adopted by this company secures
to the parties for whose benefit the Insurances are ef-
fected, the whole of the advantages, without subject-
ing them to the heavy drawback of accumulated pre-
mium notes.

Persons may effect insurance on their own lives and
the lives of others.

A married woman can insure the life of her husband,
the benefits of which are secured by law for the ex-
clusive use of herself or children.

Clergymen and all others dependent upon salaries
or their daily earnings are specially invited to avail
themselves of a resource whereby their surviving fam-
ilies may be secured from the evils of penury.

Pamphlets explanatory of the principles of Mutual
Life Insurance, and illustrating its advantages, with
forms of application, may be obtained at the office of
the company, 35 Wall street, or of any of its agents.

TRUSTEES.

Jos. B. Collins, David C. Colden,
Wm. J. Hyslop, Alfred Edwards,
R. H. McCurdy, Wm. Betts,
Fred. S. Winston, Joseph Blunt,
C. W. Faber, Isaac G. Pearson,
John P. Yelverton, Henry Wells,
Theo. Sedgwick, Wm. Moore,
Stacy B. Collins, Zebedee Cook,
John H. Swift, Jona. Miller,
John Wadsworth, David A. Comstock,
S. M. Cornell, Robert Schuyler,
Gov. M. Wilkins, James Chambers,
John V. L. Pruyn, Joseph Tuckerman,
Fred. Whittlesey, Moses H. Grinnell,
Charles Ely, Wm. J. Banker,
John C. Cruger, Eugene Duilh,
Walter Joy, Francis S. Lathrop,
Alfred Pell, John C. Thatcher.

JOSEPH B. COLLINS, President.
ISAAC ABBATT, Secretary. 3m9

FARMERS! ATTENTION!!

John Mayher & Co's

NEW AGRICULTURAL WAREHOUSE
AND SEED STORE.

197 WATER STREET, NEW YORK.

Where they have for Sale, the largest and most com-
plete assortment of Farming Implements, ever offered
for sale in this city—all of which they will sell 10 per
cent. Cheaper than the same kind of Goods can be
bought at any other house in the city. Our Goods are
all Warranted to give satisfaction.

FARMERS wanting to purchase, will please call
and examine our Stock before buying elsewhere.

Among our assortment may be found the Celebrated
Highest Premium Eagle Ploughs! together with all
the most approved Ploughs now in use.

Also,—Horse Powers, Threshing Machines, Fan
Mills, Corn Shellers, Straw Cutters, Corn Mills, Seed
Sowers, Churns, Ox Yokes, Ox Scrapers, Hay Rakes,
Horse Rakes, Patent Chain Pump (that never freezes
nor rusts), and other Pumps; in fact we have every-
thing for Farming Purposes—together with Guano,
Bone Dust and other Fertilizers.

JOHN MAYHER & CO.,
197 Water st., N. Y.

February 9, 1850.

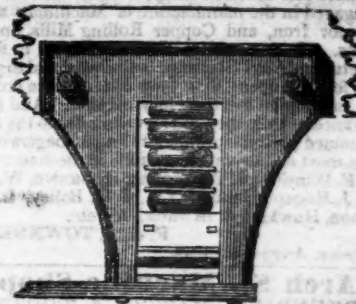
N.B.—J. M. & Co. also continue their Old Stand,
at 195 Front street, near Fulton Market.

CAUTION.

RAILROAD COMPANIES and others are here-
by cautioned against using or vending our im-
provement for easing the lateral motion as applied on
Railroad Cars. Letters Patent having been granted
to us in 1841, any party or parties so making or using
said improvement without license from us will be pro-
ceeded against according to law.

DAVENPORT & BRIDGES.

FULLER'S PATENT INDIA RUBBER SPRING.



THESE SPRINGS ARE THE CHEAPEST,
the lightest and most durable of any yet known.
They are easily applied to new or old cars, and there
is small possibility of any accident occurring to them.

Other parties through Mr. Ray set up claims to an
India Rubber Spring which, though the same in prin-
ciple, is very inferior in its working and durability.—
Actions are in progress for an Infringement on Ful-
ler's Patent against parties using that Spring.

The superiority of Fuller's Spring over that claimed
by Mr. Ray is fully established and has frequently been
testified to. The following are from gentlemen who
have had much experience with both Springs.

"It will afford me pleasure to recommend your springs
to the companies in this region, in preference to Ray's
which I am confident are inferior in mechanical ar-
rangement to yours." JOHN M'RAE,
Engineer S. Carolina R. R., Charleston.

"I do not hesitate to allow you to say that I concur
in Mr. M' Rae's opinion that Ray's springs are infer-
ior in mechanical arrangement to Fuller's. I repeat-
edly expressed that opinion long before Mr. M' Rae
had seen your springs (as I believe) and entertain it
still." WM. PARKER,
Gen'l Supt. of Baltimore and Ohio R. R.

Office of Sup't Norwich & Worcester R.R. Co. }
December 26, 1849. }

"I most fully concur in the opinion of Jno. McRae,
Engineer of S. Carolina Railroad, that 'Ray's Springs
are inferior to Fuller's Springs,' and shall with plea-
sure recommend them to all Railroad Companies for
adoption. I have used both springs on this road and
have no hesitation in saying that I should in all cases
prefer Fuller's Spring."

SAM'L H. P. LEE, JR.,
Supt and Engineer.

Office B. & P. R. R. Co., }
Boston, 20th December, 1849. }

"This company have cars fitted up with both Ray's
and Fuller's 'Metallic India Rubber Springs,' and I
do not hesitate to say that Fuller's arrangement is
very much superior to Ray's."

W. RAYMOND LEE, Supt.

The following result has been obtain'd by experi-
ment upon one railroad.

A set of Trucks fitted
with Steel Springs cost \$190-77 and weigh 2355 lbs.
The same with Fuller's
Springs, 131-71 " 1911 lbs.

Difference, \$59-06 " 444 lbs.

Not only is there an advantage in the cost, but ow-
ing to the great reduction in weight, the car can be
made lighter throughout, and so an enormous saving
in weight may be effected in a Train.

G. M. KNEVITT, 33 Broadway, N. Y.

General Agent for the U. S.

The Springs can also be had of
JAMES LEE & CO., 18 India Wharf, Boston, &
JAS. THORNLEY, 110 Chestnut St., Philad.
January 2, 1850.

WHISTLER MONUMENT Association.

MAJOR T. S. BROWN having, in leaving this
country, resigned his office as Treasurer of this
Association, the Committee appointed for that purpose
have selected as his successor GEO. M. DEXTER,
Esq., of Boston.

Those desiring to subscribe will therefore please di-
rect their communications to Geo. M. Dexter, Civil
Engineer, etc., Boston, Mass.

A. W. CRAVEN, Secretary, etc.
New York, February 22, 1850.

To the Proprietors of Rolling Mills and Iron Works.

THE Undersigned—Proprietors of Townsend's Furnace and Machine Shop, Albany—are extensively engaged in the manufacture of Machinery and fixtures for Iron, and Copper Rolling Mills, and Iron Works. Having paid particular attention to the manufacture of *Rolls* (Rollers), both *chilled* and *dry-sand*, they feel confident that they can execute orders for such castings in a satisfactory manner. And to give assurance of this, they beg leave to refer to the following named persons, proprietors and managers of some of the most extensive rolling mills in the country, viz: Jno. F. Winslow, J. Tuckerman, H. Burden, W. Burt, J. & J. Rogers, Saltus & Co., J. B. Bailey, L. G. B. Cannon, Hawkins & Atwater, etc.

F. & T. TOWNSEND.

Albany, August 18, 1849.

Arch St. Machine Shop.

BIRKENBINE, MARTIN & TROTTER,
Makers of

STEAM ENGINES,

and

HYDRAULIC MACHINERY,

NO. 16 ARCH STREET,
PHILADELPHIA.

Will construct Steam Engines, Pumps, for Draining Mines and Land; supplying Water to Towns, Factories, Farms, etc;

Also, Street Stops, Fire Plugs, Water Tanks, and Hydraulic Rams, with

(BIRKENBINE'S PATENT VALVES.)

B. M. & T. contract for Warming and Ventilating Buildings by Steam or Warm Water.

THE NEWCASTLE MANUFACTURING CO. continue to furnish at the Works, situated in the town of Newcastle, Del., Locomotive and other steam engines, Jack Screws, Wrought Iron Work and Brass and Iron Castings, of all kinds connected with Steamboats, Railroads, etc.; Mill Gearing of every description; Cast Wheels (chilled) of any pattern and size, with Axles fitted, also with wrought tires, Springs, Boxes and bolts for Cars; Driving and other wheels for Locomotives.

The works being on an extensive scale, all orders will be executed with promptness and despatch. Communications addressed to Mr. William H. Dobbs, Superintendent, will meet with immediate attention.

ANDREW C. GRAY,
President of the Newcastle Manuf. Co.

Brown's Old Established SCALE WARE HOUSE,

NO. 234 WATER ST., NEW YORK.

THE Subscriber, Practical Manufacturer of Scales of every description, respectfully asks the attention of Railroad Companies to his Improved Wrought Iron Railroad Track and Depot Scales which for strength, durability, accuracy, convenience in weighing, and beauty of workmanship, are not surpassed by any others in this country.

He is aware that this is rather a bold assertion for him to make, yet he can say with confidence that they have but to be tried to give them precedence over all others.

J. L. BROWN.

Bank Scales made to order, and all Scales of his make Warranted in every particular.

References given if required.

4tf

ENGINEERS.

Bancks, C. W.,

Civil Engineer, Vicksburg, Miss.

Berrien, John M.,

Michigan Central Railroad, Marshall, Mich.

Buckland, George,

Troy and Greenbush Railroad.

Clement, Wm. H.,

Little Miami Railroad, Cincinnati, Ohio.

Cozzens, W. H.,

Engineer and Surveyor, St. Louis, Mo.

Davidson, M. O.,

Eckhart Mines, Alleghany Co., Maryland.

Fisk, Charles B.,

Cumberland and Ohio Canal, Washington, D. C.

Felton, S. M.,

Fitchburg Railroad, Boston, Mass.

Floyd-Jones, Charles,

South Oyster Bay, L. I.

Gzowski, Mr.,

St. Lawrence & Atlantic Railroad, Montreal, Canada.

Gilbert, Wm. B.,

Rutland and Burlington Railroad, Rutland, Vt.

Grant, James H.,

Nashville and Chattanooga R. R., Nashville, Tenn.

Harry, P.,

Binghamton, New York.

Holcomb, F. P.

Southwestern Railroad, Macon, Ga.

Johnson, Edwin F.

New York and Boston Railroad, Middletown Ct.

Latrobe, B. H.,

Baltimore and Ohio Railroad, Baltimore, Md.

Miller, J. F.,

Worcester and Nashua Railroad, Worcester, Mass.

Morris, Elwood,

Schuylkill Navigation, Schuylkill Haven, Pa.

Morton, A. C.,

Atlantic and St. Lawrence Railroad, Portland, Me.

McRae, John,

South Carolina Railroad, Charleston, S. C.

Nott, Samuel,

Lawrence and Manchester Railroad, Boston.

Prichard, M. B.,

East Tennessee and Georgia R. R., Cleveland, Tenn.

Roebbling, John A.,

Trenton N. J.

Roberts, Solomon W.,

Ohio and Pennsylvania Railroad, Pittsburgh, Pa.

Sanford, C. O.,

South Side Railroad, Virginia.

Schlatter, Charles L.,

Northern Railroad (Ogdensburg), Malone, N. Y.

Sours, Peter,

Rahway, New Jersey.

Stark, George.,

Bost., Con. and Mont. R. R., Meredith Bridge, N. H.

Steele, J. Dutton,

Pottstown, Pa.

Trimble, Isaac R.,

Philad., Wil. & Baltimore Railroad, Wilmington, Del.

Tinkham, A. W.,

United States Fort, Bucksport, Me.

Thomson, J. Edgar.,

Pennsylvania (Central) Railroad, Philadelphia.

Whipple, S.,

Civil Engineer and Bridge Builder, Utica, N. Y.

Williams, E. P.,

Auburn and Schenectady Railroad, Auburn, N. Y.

Williams, Charles H.,

Milwaukee, Wisconsin.

Wormeley, Preble,

Central Ohio Railroad, Zanesville, Ohio.

HOTELS.

JONES' HOTEL,

NO. 152 CHESTNUT STREET,
PHILADELPHIA.

BRIDGES & WEST, Proprietors.

DUNLAP'S HOTEL,

On the European Plan,
NO. 135 FULTON STREET,
Between Broadway and Nassau St.,
NEW YORK.

BUSINESS CARDS.

Nathan Caswell,

METAL BROKER, 69 WALL ST., N. Y.

For the Purchase and Sale of Railroad Iron (new and old), Boiler Plates, Pig and Bar Iron, Lead, Tin, Copper, Spelter, etc. Refers to

Messrs. Boorman, Johnston, & Co., New York.

" Grinnell, Minturn & Co., "

" Barston, Pope & Co., "

" Earps & Brink, Philadelphia.

" E. Pratt & Brother, Baltimore.

John Barstow, Esq., Providence.

Lewis Bullard, Esq., Boston.

February 9, 1850.

6m*

VanRensselaer Stevens,

Sup't Transportation Providence and Worcester R.R., Providence, R.I. Has had 13 years' experience in Operating Railroads. Will go South or West if applied to.

J. & Riley Carr,

Manufacturers of Cast, Shear, German and Blister

STEEL,

Of all Descriptions, Warranted Good.
BAILEY-LANE WORKS, SHEFFIELD.

R. S. DENTON, Agent,

NO. 20 CLIFF ST., NEW YORK.

STEEL AND FILES.

R. S. Denton,

20 CLIFF STREET, NEW YORK,

AGENT FOR

J. & Riley Carr's

BAILEY-LANE WORKS, SHEFFIELD,

Manufacturers of Cast, Shear, German and Blister

STEEL

Of all descriptions. Warranted Good

FILES.

Manufacturers of Machinists' Warranted Best Cast Steel Files, expressly for working upon Iron and Steel, made very heavy for recutting.

A full Stock of Steel and Files at all times on hand.

6m4

Cumberland, (Md.) Coals for Steaming, etc.

ORDERS RECEIVED FOR AND FILLED
by J. COWLES, 37 Wall St., N. Y.

George O. Robertson,

BROKER IN SCOTCH AND AMERICAN PIG IRON;

Bar Iron, Lead, Spelter, Tin, Copper, etc.,

No. 4 Liberty Place, MAIDEN LANE,

(Near Broadway.)

NEW YORK.

Manufacture of Patent Wire ROPE AND CABLES,

For Inclined Planes, Suspension Bridges, Standing Rigging, Mines, Cranes, Derrick, Tilters, &c., by
JOHN A. ROEBLING, Civil Engineer,

TRENTON, N. J.

Samuel D. Willmott,

MERCHANT, AND MANUFACTURER OF
CAST STEEL WARRANTED SAWS,

IMPORTER OF THE

GENUINE WICKESBURY GRINDSTONES

NO. 8 LIBERTY STREET,

NEW YORK.

Doremus & Harris,

ANALYTICAL & CONSULTING CHEMISTS,
179 BROADWAY, NEW YORK.

SCHOOL OF CHEMISTRY.

Dudley B. Fuller & Co.,

IRON COMMISSION MERCHANTS,
No. 139 GREENWICH STREET,

NEW YORK.

Manning & Lee,

GENERAL COMMISSION MERCHANTS,
NO. 51 EXCHANGE PLACE,

BALTIMORE.

Agents for Avalon Railroad Iron and Nail Works.
Maryland Mining Company's Cumberland Coal CED
—Potomac and other good brands of Pig Iron.

**Railroad Car Manufacturer's
Furnishing Store.**

F. S. & S. A. MARTINE,

IMPORTERS AND MANUFACTURERS OF

**RAIL ROAD CAR &
CARRIAGE LININGS,**

PLUSHES, CURTAIN MATERIALS, ETC.,
112 WILLIAM ST., NEAR JOHN.

3-4 and 6-4 Damasks, Union and Worsted; Mo-
reens, Rattinets, Cloths, Silk and Cotton Velvets,
English Bunting

S W. Hill,

Mining Engineer and Surveyor, Eagle River,
Lake Superior.

Alfred W. Craven,

Chief Engineer Croton Aqueduct, New York.

Starks & Pruyn,

MANUFACTURERS OF ALL KINDS OF
STEAM BOILERS,

52 and 54 Liberty, corner of Pruyn street

Nathan Starks, **ALBANY** Special Partner
Wm. F. Pruyn, R. H. Pruyn.
Iron Railing, Bank and Vault Doors, Iron Shutters,
Bridge and Roof Bolts, Heavy Jobbing and Forging
of all kinds.

For particulars see Adv. in another column.

To Engineers and Surveyors.

E. BROWN AND SON Mathematical inst. mak-
ers No. 27 Fulton Slip, New York, make and keep
for sale, Theodolites, Levelling inst., Levelling rods,
Surveyors Compasses, and Chains, Cases of Mathe-
matical drawing insts. various qualities, together with
a general assortment of Ivory Scales and small insts.
generally used by Engineers.

Samuel Kimler & Co.,

COMMISSION MERCHANTS
WILLOW ST. WHARVES, PHILADELPHIA.

AGENTS for the sale of Charcoal and Anthracite
Pig Iron, Hammered Railroad Car and Locomo-
tive Axles, Force Pumps of the most approved con-
struction for Railroad Water Stations and Hydraulic
Rams, etc., etc.
July, 27, 1849.

James Herron, Civil Engineer,

OF THE UNITED STATES NAVY YARD,
PENSACOLA, FLORIDA.,

PATENTEE OF THE

HERRON RAILWAY TRACK.

Models of this Track, on the most improved plans,
may be seen at the Engineer's office of the New York
and Erie Railroad.

To Railroad Companies.

—WROUGHT IRON WHEELS—
SAFETY AND ECONOMY.

NORRIS' LOCOMOTIVE WORKS,
SCHENECTADY, NEW YORK,

Are Manufacturing Wrought Iron Driving, Truck,
Tender, and Car Wheels—made from the best Ameri-
can Iron. Address E. S. NORRIS.
May 16, 1849.

Machinery Warehouse.

S. C. HILLS, No. 43 Fulton street, New York, has
constantly for sale Steam Engines, Boilers, Lathes,
Chucks, Drills, Planers, Force and Suction Pumps;
Tenoning, Morticing and Boring Machines, Shingle
Machines, Bolt and Nut Machines, Belting, Oil, Iron
and Lead Pipe; Rubber, Percha and Leather Hose,
&c., &c.

S. C. H.'s arrangements with several machine shops
are such that he can supply, at very short notice, large
quantities of machinery.

November 23, 1849.

Cruse & Burke,

Civil Engineers, Architects and Surveyors,
Office, New York State Institution of Civil Engineers,
STATE HALL, ALBANY, N. Y.

Drawings, specifications and surveys accurately ex-
ecuted. Pupils instructed theoretically and practical-
ly at a moderate premium.

May 26, 1849.

Eaton, Gilbert & Co.,

Railroad Car, Coach and Omnibus Builders,
TROY, N. Y.

**Hudson River Foundry,
THOMAS & COLLINS,**

130 Quay Street, Albany.

To Railroad & Navigation Cos.

Mr. M. BUTT HEWSON, Civil Engineer, offers his
services to Companies about to carry out the surveys
or works of a line of Navigation or Railroad. He can
give satisfactory references in New York City as to his
professional qualifications; and will therefore merely
refer here to the fact of his having been engaged for
upwards of two years conducting important Public
Works for the British Government.

Communications will find Mr. Hewson at the office
of the Railroad Journal, 54 Wall Street, New York.

Walter K. Johnson,

CIVIL AND MINING ENGINEER AND AT-
torney for Patents. Office and Laboratory, F St.,
opposite the Patent office, Washington, D. C.

Cop Waste.

CLEAN COP WASTE, suitable for cleaning Rail-
road, Steam and Stationary Engines, con-
stantly on hand and for sale by

KENNEDY & GELSTON,
54 Pine St., New York.

October 27, 1849.

Ranstead, Dearborn & Co.,

MANUFACTURERS OF

LOCOMOTIVE CRANKS AND CAR AXLES,
ALSO

WROUGHT IRON SHAFTING,
And All Kinds of Hammered Shapes.

Forge at Commercial Point, Dorchester,
Office 25 Foster's Wharf, opposite No. 211 Broad St.
BOSTON.

IRON.

Iron.

Pig Iron, Anthracite and Charcoal; Boiler and Flue
Iron, Spring and Blistered Steel, Nail Rods, Best Re-
fined Bar Iron, Railroad Iron, Car Axles, Nails, Stove
Castings, Cast Iron Pipes of all sizes, Railway Chairs
of approved patterns for sale by

COLEMAN, KELTON & CAMBELL,
109 N. Water St., Philadelphia.

IRONDALE PIG METAL, MANUFACTURED
and for sale by the Bloomsburg Railroad Iron Co.

DUDLEY FISHER, Treasurer.
75 N. Water St., Philadelphia.

Railroad Iron.

500 Tons, afloat, weighing 57 pounds per lineal
yard, for sale by

COLLINS, VOSE & CO.,
158 South St.

New York, November 17, 1849.

Railroad Iron.

1675 Tons, weighing about 61 lbs. per yard, 90
tons, weighing about 52 lbs. per yard, and
825 tons, weighing about 53½ lbs. per yard, of the lat-
est and most approved patterns of T rail, for sale by

BOORMAN, JOHNSTON & CO.,
119 Greenwich street.

New York, Feb. 25, 1850.

N.B.—B. J. & Co are also prepared to take con-
tracts for English rails, delivered in any of the Atlan-
tic ports of the United States.

Railroad Iron.

THE UNDERSIGNED, HAVING made arrange-
ments abroad, are prepared to contract for the de-
livery of Foreign rails, of approved brands upon the
most favorable terms.

They will also make contracts for American rails,
made at their Trenton works, from Andover Iron, in
whole or in part, as may be agreed upon.

They are prepared to furnish Telegraph, Spring and
Market Wire; Braziers and Wire Rods; Rivets and
Merchant Bars to order, all made exclusively from An-
dover-Iron. The attention of parties who require iron
of the very best quality for special purposes, is respect-
fully invited.

COOPER & HEWITT,
17 Burling Slip, New York.

February 15, 1850.

Glendon Refined Iron.

Round Iron, Band Iron, Hoop Iron,
Square " Flat " Scroll "

Axles, Locomotive Tyres,
Manufactured at the Glendon Mills, East Boston, for
sale by **GEORGE GARDNER & CO.,**
5 Liberty Square, Boston, Mass.

Sept. 15, 1849.

3m37

**PATENT HAMMERED RAILROAD, SHIP &
BOAT SPIKES.**—The Albany Iron Works
have always on hand, of their own manufacture, a
large assortment of Railroad, Ship and Boat Spikes
from 2 to 12 inches in length, and of any form of head.
From the excellence of the material always used in
their manufacture, and their very general use for rail-
roads and other purposes in this country, the manu-
facturers have no hesitation in warranting them fully
equal to the best spikes in market, both as to quality
and appearance. All orders addressed to the subscrib-
ers at the works will be promptly executed.

JOHN F. WINSLOW, Agent.

Albany Iron and Nail Works, Troy, N. Y.
The above Spikes may be had at first prices, of
Erastus Corning & Co Albany; Menitt & Co., New
York; E. Pratt & Br 1st. Es. 2nd. Md

**LAP—WELDED
WROUGHT IRON TUBES**

FOR

TUBULAR BOILERS,

FROM 1 1-2 TO 8 INCHES DIAMETER.

These are the ONLY Tubes of the same quality
and manufacture as those so extensively used in
England, Scotland, France and Germany, for Lo-
comotive, Marine and other Steam Engine Boilers

THOMAS PROSSER,

Patentee.

28 Platt street, New York

Railroad Iron.

THE UNDERSIGNED ARE PREPARED TO
contract for the delivery of English Railroad Iron
of favorite brands, during the Spring. They also re-
ceive orders for the importation of Pig, Bar, Sheet, etc.
Iron.

THOMAS B. SANDS & CO.,

22 South William street,

February 3, 1849.

New York.

Iron Store.

THE Subscribers, having the selling agency of the
following named Rolling Mills, viz: Norristown,
Rough and Ready, Kensington, Philadelphia, Potta-
grove and Thorndale, can supply Railroad Companies,
Merchants and others, at the wholesale mill prices for
bars of all sizes, sheets cut to order as large as 58 in.
diameter; Railroad Iron, domestic and foreign; Loco-
motive tire welded to given size; Chairs and Spikes;
Iron for shafting, locomotive and general machinery
purposes; Cast, Shear, Blister and Spring Steel; Boil-
er rivets; Copper; Pig iron, etc., etc.

MORRIS, JONES & CO.,

Iron Merchants,

Schuylkill 7th and Market Sts., Philadelphia.
August 16, 1849.

1y33

Railroad Iron.

THE MOUNT SAVAGE IRON WORKS, AL-
legany county, Maryland, having recently pass-
ed into the hands of new proprietors, are now prepar-
ed, with increased facilities, to execute orders for any
of the various patterns of Railroad Iron. Commu-
nications addressed to either of the subscribers will have
prompt attention. **J. F. WINSLOW, President**

Troy, N. Y.

ERASTUS CORNING, Albany

WARREN DELANO, Jr., N. Y.

JOHN M. FORBES, Boston.

ENOCH PRATT, Baltimore, Md.

November 6, 1849.

Railroad Iron.

THE SUBSCRIBERS ARE PREPARED TO
take orders for Railroad Iron to be made at their
Phoenix Iron Works, situated on the Schuylkill Riv-
er, near this city, and at their Safe Harbor Iron Works,
situated in Lancaster County, on the Susquehanna
river; which two establishments are now turning out
upwards of 1800 tons of finished rails per month.

Companies desirous of contracting will be promptly
supplied with rails of any required pattern, and of the
very best quality.

REEVES, BUCK & CO.,

45 North Water St., Philadelphia.

March 15, 1849.

Monument Foundry.

A. & W. DENMEAD & SON,
Corner of North and Monument Sts.,—Baltimore,
HAVING THEIR

IRON FOUNDRY AND MACHINE SHOP

In complete operation, are prepared to execute faithfully and promptly, orders for Locomotive or Stationary Steam Engines, Woolen, Cotton, Flour, Rice, Sugar Grist, or Saw Mills, Slide, Hand or Chuck Lathes, Machinery for cutting all kinds of Gearing, Hydraulic, Tobacco and other Presses, Car and Locomotive patent Ring Wheels, warranted, Bridge and Mill Castings of every description, Gas and Water Pipes of all sizes, warranted, Railroad Wheels with best fagotted axle, furnished and fitted up for use, complete.

Being provided with Heavy Lathes for Boring and Turning Screws, Cylinders, etc., we can furnish them of any pitch, length or pattern.

Old Machinery Renewed or Repaired—and Estimates for Work in any part of the United States furnished at short notice.

June 8, 1849.

Iron Wire.

REFINED IRON WIRE OF ALL KINDS, Card, Reed, Cotton-flyer, Annealed, Broom, Buckle, and Spring Wire. Also all kinds of Round, Flat or Oval Wire, best adapted to various machine purposes, annealed and tempered, straightened and cut any length, manufactured and sold by

ICHABOD WASHBURN.

Worcester, Mass., May 23, 1849.

American and Foreign Iron.**FOR SALE,**

300 Tons A 1, Iron Dale Foundry Iron.

100 " 1, " " " "

100 " 2, " " " "

100 " " Forge " "

400 " Wilkesbarre " "

100 " "Roaring Run" Foundry Iron.

300 " Fort " "

50 " Catocin " "

250 " Chikiswalungo " "

50 " "Columbia" "chilling" iron, a very superior article for car wheels.

75 " "Columbia" refined boiler blooms.

30 " 1 x 1/2 Silt iron.

50 " Best Penna. boiler iron.

50 " "Puddled" " "

150 " Bagnall & Sons refined bar iron.

50 " Common bar iron.

Locomotive and other boiler iron furnished to order.

GOODHUE & CO.,

New York.

64 South street

American Pig, Bloom and Boiler Iron.

HENRY THOMPSON & SON,

No 57 South Gay St., Baltimore, Md.,

Offer for sale Hot Blast Charcoal Pig Iron made at the Catocin (Maryland), and Taylor (Virginia), Furnaces; Cold Blast Charcoal Pig Iron from the Cloverdale and Catawba, Va., Furnaces, suitable for Wheels or Machinery requiring extra strength; also Boiler and Plug Iron from the mills of Edge & Hilles in Delaware, and best quality Boiler Blooms made from Cold Blast Pig Iron at the Shenandoah Works, Va. The productions of the above establishments can always be had at the lowest market price, for approved paper.

American Pig Iron of other brands, and Rolled and Hammered Bar Iron furnished at lowest prices. Agents for Watson's Perth Amboy Fire Bricks, and Rich & Co's. New York Salamander Iron Chests. Baltimore, June 14, 1849. 6 mos

Wheel, Forge and Foundry Iron.

LOCUST GROVE Wheel Iron of great strength and superior chilling property. Balt. Charcoal-Forge Iron, from Patuxent, Curtis Creek and Gunpowder furnaces.

Elkridge Foundry Iron, of superior strength and softness. Anthracite and Charcoal Iron from Pennsylvania and Virginia. Gas and Water Pipes, Lamp Posts from Elkridge furnace.

LEMMON & GLENN,
603 Buchanan's Wharf, Baltimore.

Iron.

THE SUBSCRIBERS having resumed the agency of the New-Jersey Iron Company, are prepared to execute orders for the different kinds and sizes of Iron usually made at the works of the company, and offer for sale on advantageous terms—

150 tons No. 1 Boonton Foundry Pig Iron.
100 " No. 2 do. do. do.
300 " Nos. 2 & 3 Forge do. do.
100 " No. 2 Glendon do. do.
140 " Nos. 2 & 3 Lehigh Crane do do.
100 " No. 1 Pompton Charcoal do.
100 " New-Jersey Blooms
50 " New-Jersey Fagotted Iron, for shafts
Best Bars, 1/2 to 4 inch by 1/2 to 1 inch thick.
Do do Rounds and Squares, 1/2 to 3 inch.
Rounds and Squares, 3-16 to 1 inch.
Half Rounds, 1/2 to 1 in. Ovals & Half Ovals 1/2 to 1 1/2 in.
Bands, 1/2 to 4 inch. Hoops, 1/2 to 2 inch.
Trunk Hoops, 1/2 to 1 1/2 in. Horse Shoe & Nut Iron.
Nail Plates. Railroad Spikes.

DUDLEY B. FULLER & Co., 139 Greenwich-st. and 85 Broad-st.

WILLIAM JESSOP & SONS' CELEBRATED CAST-STEEL.

The subscribers have on hand, and are constantly receiving from their manufactory,

PARK WORKS, SHEFFIELD,
Double Refined Cast Steel—square, flat and octagon.
Best warranted Cast Steel—square, flat and octagon.
Best double and single Shear Steel—warranted.
Machinery Steel—round.

Best and 2d gy. Sheet Steel—for saws and other purposes.

German Steel—flat and square, "W. I. & S." "Eagle" and "Goat" stamps.

Genuine "Sykes," L. Blister Steel.

Best English Blister Steel, etc., etc., etc.

All of which are offered for sale on the most favorable terms by

WM. JESSOP & SONS,

91 John street, New York.

Also by their Agents—

Curtis & Hand, 47 Commerce street, Philadelphia.

Alex'r Fullerton & Co., 119 Milk street, Boston.

Stickney & Beatty, South Charles street, Baltimore.

May 6, 1848.

Ogden & Martin's ROSENDALE CEMENT.

WE are prepared to enter into arrangements for supplying our Cement for public works or other purposes. We warrant the cement equal in every respect to any manufactured in this country. It attains a great degree of hardness, sets immediately under water, and is a superior article for masonry coming in contact with water, or requiring great strength.

For sale in tight barrels, well papered, at their office by **OGDEN & MARTIN,** 104 Wall st. ly*
February 16, 1850.

The above cement is used in most of the fortifications building by government.

JOHNSON, CAMMELL & Co's Celebrated Cast Steel,

AND
ENGINEERING AND MACHINE FILES,
which for quality and adaptation to mechanical uses, have been proved superior to any in the United States. Every description of square, octagon, flat and round cast steel, sheet, shovel and railway spring steel, best double and single shear steel, German steel, flat and square, goat stamps, etc. Saw and file steel, and steel to order for any purposes, manufactured at their Cyclops Steel Works Sheffield.

JOHNSON, CAMMELL & CO.,

100 William St., New York.

November 23 1849.

Railroad Iron.

1,500 Tons weighing 59 lbs. per lineal yard.

500 " " 57 " " "

500 " " 56 " " "

500 " " 60 & 61 lbs. "

Also 2 1/2 x 1/2 flat rails. All the above being of approved patterns. For sale by

DAVIS, BROOKS, & CO.,

68 Broad street.

N.B.—Rails imported on commission, or at a fixed price.

CUT NAILS OF BEST QUALITY, BAR IRON (including Flat Rails) manufactured and for sale by **FISHER, MORGAN & CO.,** 75 N. Water St., Philadelphia.

American Cast Steel.

THE ADIRONDAC STEEL MANUFACTURING CO. is now producing from American iron, at their works at Jersey City, N.J., Cast Steel of extraordinary quality, and is prepared to supply orders for the same at prices below that of the imported article of like quality. Consumers will find it to their interest to give this a trial. Orders for all sizes of hammered cast steel, directed as above, will meet with prompt attention.

May 28, 1849.

To Steam Engine Builders.

THE Undersigned offer for sale, at less than half its cost, the following new machinery, calculated for an engine of 62 inches cylinder and 10 feet stroke, viz.

2 Wrought Iron Cranks, 60 inches from centre to centre.

1 Do. do. Connecting Rod Strap.

2 Do. do. Crank Pins.

1 Eccentric Strap.

1 Diagonal Link with Brasses.

1 Cast Iron Lever Beam (forked).

The above machinery was made at the West Point Foundry for the U. S. Steamer Missouri, without regard to expense, is all finished complete for putting together, and has never been used. Drawings of the cranks can be seen on application to

HENRY THOMPSON & SON,

No. 57 South Gay St., Baltimore, Md.

Sept. 12, 1849.

Railroad Instruments.

THEODOLITES, TRANSIT COMPASSES, and Levels, with Fraunhofers Munich Glasses, Surveyor's Compasses, Chains, Drawing Instruments, Barometers, etc., all of the best quality and workmanship, for sale at unusually low prices, by

E. & G. W. BLUNT,

No. 179 Water St., cor. Burling Slip.

New York, May 19, 1849.

Ballard's Improved JACK-SCREW.

PATENTED.

THE ADVANTAGES OF THIS Screw for Stone Quarries, Railroads, Steam Boiler Builders, and for other purposes are superior to any other similar machine.

The improvement consists in being able to use either end of the screw, as occasion requires.

It is capable of raising the heaviest Locomotive with ease, being portable, strong and powerful, and not likely to get out of order.

Many Railroad Companies and Boiler Makers have them in use—by whom they are highly recommended.

JACK SCREWS, of various sizes, power and price, constantly on hand at the manufactory.

No. 7 Eldridge Street,

near Division Street.

New York, Jan. 19, 1850.

To Railroad Companies and Contractors.

FOR SALE.—Two Locomotive Engines and Tenders, at present in use on the Beaver Meadow Railroad, being too light for their coal trains, but well calculated for either gravel or light passenger trains.

They weigh, in running order, about 8 tons each—having one pair of driving wheels 4 feet diameter, 4 truck wheels 30 inches diameter, with cylinders 10 in. diameter, and 13 inches stroke of piston. Tenders on 4 wheels. Address **JAMES ROWLAND,**

Prest, Beaver Meadow Railroad & Coal Co., Philadelphia.

or, **L. CHAMBERLAIN, Sec'y,** at Beaver Meadow, Pa.

May 19, 1849.

SPRING STEEL FOR LOCOMOTIVES, TENDERS AND CARS.—The subscriber is engaged in manufacturing spring steel from 1 1/2 to 6 inches in width, and of any thickness required: large quantities are yearly furnished for railroad purposes, and wherever used its quality has been approved of. The establishment being large, can execute orders with great promptitude, at reasonable prices, and the quality warranted. Address **J. F. WINSLOW, Agent,** Albany Iron and Nail Works.



To Railroad Companies.

FOR SALE—A Second-hand Locomotive Engine and Tender, of about 10 tons weight, in good order, and warranted to perform well. Any company wanting a cheap engine for a passenger or light burden train, will rarely meet with an opportunity so favorable as the present. The engine and tender are in perfect running order, and will be tested to the satisfaction of any one wishing to purchase. Price \$1,500.

Address **J. B. MOORHEAD,**
Frazer P.O., Chester county, Pa.

P.S.—The Engine can be seen by calling on H. Osmond & Co., Car-builders, Broad st., Philadelphia.
September 6, 1849.

India-rubber for Railroad Cos.

RUBBER SPRINGS—Bearing and Buffer—Fuller's Patent—Hose from 1 to 12 inches diameter. Suction Hose. Steam Packing—from 1-16 to 2 in. thick. Rubber and Gutta Percha Bands. These articles are all warranted to give satisfaction, made under Tyer & Helm's patent, issued January, 1849.—No lead used in the composition. Will stand much higher heat than that called "Goodyear's," and is in all respects better than any in use. Proprietors of railroads do not be overcharged by pretenders.

HORACE H. DAY,
Warehouse 23 Courtlandt street.
New York, May 21, 1849.

Fire Brick.

THE Subscribers have constantly on hand Rafford's Stourbridge, Oak Farms Stourbridge, Lister, Wortley, Red and White Welsh Fire Bricks, common and fancy shapes. Also,

ROOFING SLATES,

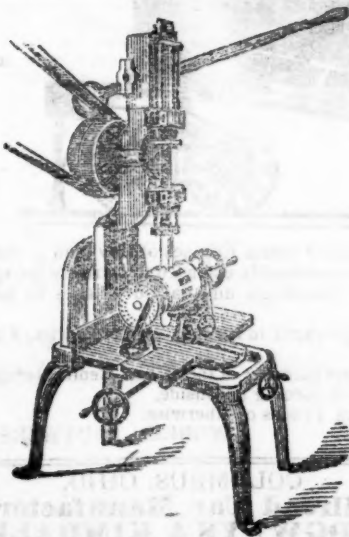
from the best Welch quarries, and of all sizes. Also, COAL,

of all kinds—Liverpool Orrell and Cannel, Scotch, New Castle, Pictou, Sidney, Cumberland, Virginia, and all kinds of Anthracite coals. Also,

Pig Iron, Salt, etc., etc., for sale at the lowest market price. Apply to

SAMUEL THOMPSON & NEPHEW,
275 Pearl and 43 Gold Sts., New York.
November, 23, 1849.

**Capt. Alfred Swingle's
PATENT BORING
& MORTISING MACHINE.**



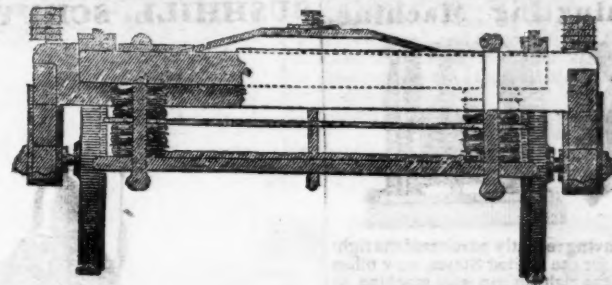
The above Machine was invented by A. SWINGLE, of Texas, in 1846, and Letters Patent were taken out in July, 1848. As a labor saving Machine it stands unrivalled even in these days of improvements. Its uses are innumerable; it may be successfully applied to Doors, Sashes, Carriages, Wheel-Hubs, and in fact to all kinds of work where the Auger and Chisel can be brought to bear.

The only limit to the speed of the working of this machine is the heating of the tools used. It will perform at least the labor of twelve men, and in vastly better manner, and can be worked equally well by steam power or by hand. It has been used and has given universal satisfaction.

For further information apply to H. B. TESSER, 40 Wall St., New York, to whom all orders are to be addressed.

New York, December 15, 1849.

**FULLER'S PATENT
INDIA RUBBER CAR SPRINGS.**



RAILROAD COMPANIES are cautioned, before purchasing Springs, to examine the actual patents and judge for themselves.

Persons, under the Title of the New England Car Company, seeking fraudulently to invade Fuller's rights have put forth so many statements for the purpose of misleading the public, that an enumeration of some facts is absolutely necessary, for the purpose of putting persons interested upon their guard.

Fuller's patent is for the application of Discs of India-rubber with Metal Plates, for forming Springs for Railway Cars and Carriages—either one disc and two plates, or ten discs and plates, or any other number, are equally covered by the patent. Fuller is not bound to the use of short discs—he may use long discs and plates.

Ray's patent is simply and wholly the forming of air tight rubber cylinders, with hoops or bands round the outside, and the combination of elasticity of India rubber, with the elasticity of atmospheric air confined in the cylinder, and in no part of his patent is he authorized to use the form of spring which he is now fraudulently supplying to Railroad Companies. Such springs are direct and positive infringements of the very letter of Fuller's patent.

Fuller's patent is dated October, 1845, Ray's patent, August, 1848.

The spring patented by Ray never has been put in operation, and never can be made useful for Railroad cars.

A mere experiment, even if made, it is well known does not prove an invention; and it is ridiculous for such parties to hope to mislead the Presidents and Superintendents of Railroad companies, by claiming the invention because Ray alleges he made an experiment—which Fuller had made before him—had actually brought into working order, and obtained a patent for—and this too before Mr. Ray states he made his experiment—and that experiment not claimed to have been applied to a car or carriage.

Besides, the invention could not have been developed until India rubber, properly Vulcanised, could be made of a sufficient thickness. In the United States the art of vulcanising rubber by steam heat, (by which

means only can a body of rubber having any considerable thickness be vulcanised,) was not introduced until after the grant by the American government of the patent for springs to Fuller—whereas the process of vulcanising rubber by steam heat was invented in England about three years previously, and was used by Fuller there. This fact refutes entirely the claim of invention put forth by Mr. Ray, and proves the impossibility of his pretensions being true.

Fuller was the first and only inventor of the spring. A Mr. Dorr, whose connection with Mr. Goodyear is well known in this country, applied in England to Mr. Fuller, after he had published and patented his invention, and introduced another party for the purpose of obtaining the agency for the United States. They were furnished with a complete set of drawings and models, and with instructions to make arrangements for the supply of material of American manufacture from that hour to the present not a single communication has been received from them. Some of these identical models have been traced into the hands of parties now seeking to invade Fuller's rights, and who have exhibited them as specimens of their own invention.

After this, the conveyance was made by Goodyear to certain parties here for the use for railroad springs of what he calls his Metallic rubber. Comment is unnecessary.

There are 5 or 6 different processes for the manufacture of vulcanised rubber, patented by as many different parties, some here, some in England, either of which would probably make good springs.

A large and powerful company has been organised under Fuller's patent, the particulars of which shall be given very shortly.

An action has been commenced against three railroad companies for infringement; and all other parties will assuredly be prosecuted if they continue farther to infringe upon Fuller's patent.

W. C. FULLER,

The only persons authorised to supply the Springs are **G. M. KNEVITT**, 33 Broadway, N. York, General Agent for the U. S.; and **JAS. LEE & Co.**, 18 India Wharf, Boston. **JOHN THORNLEY**, Chestnut st., Philad.

Patent India Rubber Steam Packing.

THIS article, made by the subscriber, who alone is authorised to make it, is warranted to stand as high a degree of heat as any that has been or can be made by any person—and is the article which has made the reputation of India Rubber Steam Packing and the demand therefor. A large assortment of all thicknesses requisite for any description of engines, steam pipes, valves, etc., constantly on hand and for sale by the manufacturer and patentee, who will give every information regarding its properties, mode of use, etc., at the warehouse. **JOHN GREACHEN, JR.,**
98 Broadway, opposite Trinity Church.
New York, October, 1849.

**Ibbotson, Brothers & Co's
CELEBRATED CAST STEEL**

Best Cast Steel Royal Improved Files, well known as better adapted for Engineers' and Machinists' purposes than any now in use in the United States.

Every description of Square, Octagon, Flat and Round Cast Steel, Sheet, Shovel and Railway Spring Steel, etc., and Steel to order for any purposes—manufactured at their works in Sheffield—and universally known by the old stamp "Globe."

HENRY J. IBBOTSON, Agent,
213 Pearl st., New York.

February 25, 1850.

FAIRBANKS' RAILROAD SCALES.—THE subscribers are prepared to construct at short notice, Railroad and Depot Scales, of any desired length and capacity. Their long experience as manufacturers—their improvements in the construction of the various modifications, having reference to strength, durability, retention of adjustment, accuracy of weight and dispatch in weighing—and the long and severe tests to which their scales have been subjected—combine to ensure for these scales the universal confidence of the public.

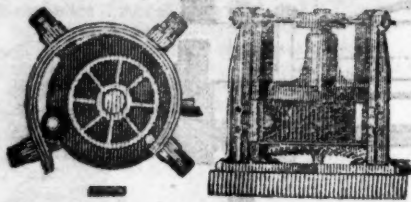
No other scales are so extensively used upon railroads, either in the United States or Great Britain;—and the managers refer with confidence to the following in the United States.

Eastern Railroad. Boston & Maine Railroad.
Providence Railroad. Providence and Wor. Road.
Western Railroad. Concord Railroad.
Old Colony Railroad. Fitchburg Railroad.
Schenectady Railroad. Syracuse and Utica Road.
Balt. and Ohio Railroad. Baltimore and Susq. Road.
Phila. & Reading Road. Schuylkill Valley Road.
Central (Ga.) Railroad. Macon and Western Road.
New York and Erie Railroad.

And other principal Railroads in the Western, Middle and Southern States.

E. & F. FAIRBANKS & CO.
St. Johnsbury, Vt.

Agents, **FAIRBANKS & Co.**, 81 Water St., N. York.
A. B. NORRIS, 196 Market St. Philadelphia.
April 22, 1849.

MACHINERY.**Henry Burden's Patent Revolving Shingling Machine.**

THE Subscriber having recently purchased the right of this machine for the United States, now offers to make transfers of the right to run said machine, or sell to those who may be desirous to purchase the right for one or more of the States.

This machine is now in successful operation in ten or twelve iron works in and about the vicinity of Pittsburgh, also at Phoenixville and Reading, Pa., Covington Iron Works, Md., Troy Rolling Mills, and Troy Iron and Nail Factory, Troy, N. Y., where it has given universal satisfaction.

Its advantages over the ordinary Forge Hammer are numerous: considerable saving in first cost; saving in power; the entire saving of shingler's, or hammerman's wages, as no attendance whatever is necessary, it being entirely self-acting; saving in time from the quantity of work done, as one machine is capable of working the iron from sixty puddling furnaces; saving of waste, as nothing but the scoria is thrown off, and that most effectually; saving of staffs, as none are used or required. The time required to furnish a bloom being only about six seconds, the scoria has no time to set, consequently is got rid of much easier than when allowed to congeal as under the hammer. The iron being discharged from the machine so hot, rolls better and is much easier on the rollers and machinery. The bars roll sounder, and are much better finished. The subscriber feels confident that persons who will examine for themselves the machinery in operation, will find it possesses more advantages than have been enumerated. For further particulars address the subscriber at Troy, N. Y.

P. A. BURDEN.

Railroad Spikes and Wrought Iron Fastenings.

THE TROY IRON AND NAIL FACTORY, exclusive owner of all Henry Burden's Patented Machinery for making Spikes, have facilities for manufacturing large quantities upon short notice, and of a quality unsurpassed.

Wrought Iron Chairs, Clamps, Keys and Bolts for Railroad fastenings, also made to order. A full assortment of Ship and Boat Spikes always on hand.

All orders addressed to the Agent at the Factory will receive immediate attention.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

RAILROAD WHEELS.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED are now prepared to manufacture their Improved Corrugated Car Wheels, or Wheels with any form of spokes or discs, by a new process which prevents all strain on the metal, such as is produced in all other chilled wheels, by the manner of casting and cooling. By this new method of manufacture, the hubs of all kinds of wheels may be made whole—that is, without dividing them into sections—thus rendering the expense of banding unnecessary; and the wheels subjected to this process will be much stronger than those of the same size and weight, when made in the ordinary way.

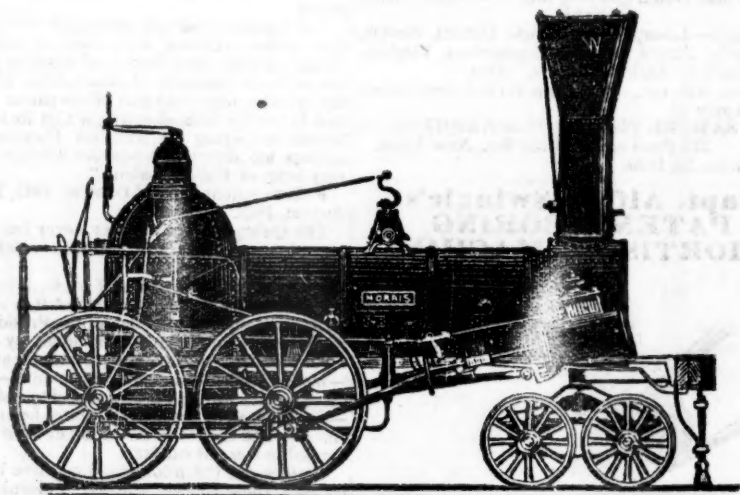
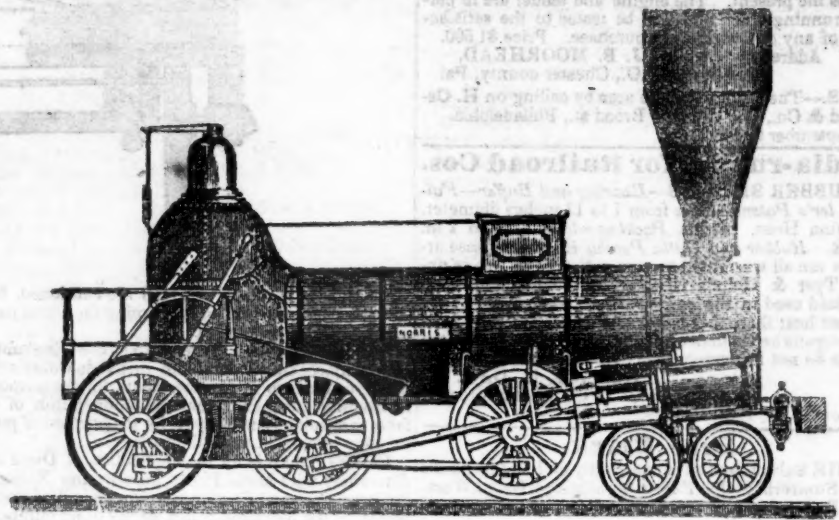
A. WHITNEY & SON,
Willow St., below 13th,
Philadelphia, Pa.

CHILLED RAILROAD WHEELS.—THE UNDERSIGNED, the Original Inventor of the Plate Wheel with solid hub, is prepared to execute all orders for the same, promptly and faithfully, and solicits a share of the patronage for those kind of wheels which are now so much preferred, and which he originally produced after a large expenditure of time and money.

A. TIERS,
Point Pleasant Foundry.

He also offers to furnish Rolling Mill Castings, and other Mill Gearing, with promptness, having, he believes, the largest stock of such patterns to be found in the country.

Kennington, Philadelphia Co.,
March 12, 1848.

NORRIS' LOCOMOTIVE WORKS.
BUSHHILL, SCHUYLKILL SIXTH-ST., PHILADELPHIA,

THE UNDERSIGNED Manufacture to order Locomotive Steam Engines of any plan or size. Their shops being enlarged, and their arrangements considerably extended to facilitate the speedy execution of work in this branch, they can offer to Railway Companies unusual advantages for prompt delivery of Machinery of superior workmanship and finish.

Connected with the Locomotive business, they are also prepared to furnish, at short notice, Chilled Wheels for Cars of superior quality.

Wrought Iron Tyres made of any required size—the exact diameter of the Wheel Centre, being given, the Tyres are made to fit on same without the necessity of turning out inside.

Iron and Brass castings, Axles, etc., fitted up complete with Trucks or otherwise.

NORRIS, BROTHERS

LAWRENCE'S ROSENDALE HYDRAULIC Cement. This Cement is warranted equal to any manufactured in this country, and has been pronounced superior to Francis' "Roman." Its value for Aqueducts, Locks, Bridges, Flooms, and all Masonry exposed to dampness, is well known, as it sets immediately under water, and increases in solidity for years.

For sale in lots to suit purchasers, in tight papered barrels, by

JOHN W. LAWRENCE,

142 Front-street, New York.

Orders for the above will be received and promptly attended to at this office.

32 ly.

PATENT MACHINE MADE HORSE-SHOES.

The Troy Iron and Nail Factory have always on hand a general assortment of Horse Shoes, made from Refined American Iron.

Four sizes being made, it will be well for those ordering to remember that the size of the shoe increases as the numbers—No. 1 being the smallest.

P. A. BURDEN, Agent,
Troy Iron and Nail Factory, Troy, N. Y.

**COLUMBUS, OHIO,
Railroad Car Manufactory.
RIDGWAYS & KIMBALL,**

HAVE established at this central point, the manufacture of Passenger, Freight, Gravel and Hand Cars for Railroads, and assure all Western Railroad Companies that it will be their constant aim to procure the best materials and workmen, and to turn out the best kind of work at fair prices. Specimens may be seen on the Columbus and Xenia Railroad. The patronage of Railroad Companies is respectfully solicited.

1y8

To Inventors and Patentees.

OWEN G. WARREN, ARCHITECT, Has had many years' experience as Agent for obtaining Patents, both in this country and Europe, and will transact such business promptly and reasonably. Persons at a distance can have their business done by correspondence—without the necessity of visiting this city or Washington. Office No. 94 Merchants Exchange, Wall st., corner of Hanover st., up stairs.

1y3

MR. HALE:—"The New England Car Co., having been engaged for the last six months in introducing the Vulcanized India-rubber Car Springs upon the different railroads in this and other states, and having in particular introduced it upon the Boston and Worcester railroad with perfect success, were much gratified to find, by your paper of this morning, that the article had given satisfaction to the president of that corporation, and the terms of just commendation in which you were pleased to speak of it. But their gratification was scarcely equalled by their surprise, when, or arriving at the close of your paragraph, they found the results of all their labors attributed to a foreign source, with which the New England Car Co. has no connection. The material used on the Boston and Worcester railroad, and all the other railroads in this country, where any preparation of India-rubber has been successfully applied, is entirely an American invention, patented in the year 1844 to Charles Good-year, of New Haven, Conn., and the application of it to this purpose and the form in which it is applied are the invention of F. M. Ray of New York. The only material now in use, and so far as has yet appeared, the only preparation of India rubber capable of answering the purpose, has been furnished under these patents by the New England Car Company, manufactured under the immediate inspection of their own agent. If any other should be produced, the right to use it would depend upon the question of its interference with Mr. Goodyear's patent. The New England Car Company have their place of business in this city at No. 99 State street, and are prepared to answer all orders for the Vulcanized India rubber Car Springs, of the same quality and of the same manufacture as those which they have already placed on your road, and most of the other roads terminating in this city."

And yet Mr. Knevit is using these experiments made upon the Springs of the Car Company to induce the public to purchase his springs, and is attempting to impose upon them the belief that the springs used were furnished by him! We ask whether such a course is honorable, or entitles his statements to much consideration from the public.

The above Springs are for sale 98 Broadway, New York, and 99 State street, Boston.

EDWARD CRANE Agent, Boston.
F. M. RAY, Agent, New York.

Boston, May 8, 1849.

NICOLL'S PATENT SAFETY SWITCH FOR Railroad Turnouts. This invention for some time in successful operation on one of the principal railroads in the country, effectually prevents engines and their trains from running off the track at a switch, left wrong by accident or design. It acts independently of the main track rails; being laid down or removed without cutting or displacing them.

It is never touched by passing trains, except when in use, preventing their running off the track. It is simple in its construction and operation, requiring only two castings and two rails; the latter, even if much worn or used, not objectionable.

Working models of the Safety Switch may be seen at Messrs. Davenport, Bridges & Kirk's Cambridge Port, Mass., and at the office of the Railroad Journal, New York.

Plans, Specifications, and all information obtained, on application to the Subscriber, Inventor and Patentee.

G. A. NICOLLS,
Reading, Pa.

Railroad Lanterns.

COPPER and Iron Lanterns for Railroad Engines, fitted with heavy silver plated Parabolic Reflectors of the most approved construction, and Solar Argand Lamps; manufactured by

HENRY N. HOOPER & CO.,
No. 24 Commercial St. Boston.
August, 16, 1849. 6m33

NORRIS' LOCOMOTIVE WORKS, SCHENECTADY, N. Y.

THESE Works are in full operation in Manufacturing to order, Locomotive Steam Engines & Tenders, of the best principle and construction of material, using wrought iron heavy frames with pedestals welded thereto, and all parts of the engine made of the best wrought iron, except cylinders, pumps and boxes—obtaining greater durability, and carrying less weight over the road, than engines constructed of cast iron.

Wrought Iron Tires made any required size, and the Bars bent and welded with dispatch.

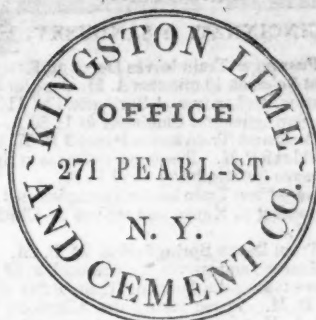
Chilled Wheels for Cars, Trucks and Tenders, made from the toughest iron.

Driving and Tender and Car Wheels fitted to Axles with Brass Boxes and Springs, and Railroad Machinery generally. Manufactured and for sale by

E. S. NORRIS.

April 11, 1849.

Hydraulic Cement.



HYDRAULIC CEMENT, OF BEST QUALITY, manufactured at their works, for sale in lots to suit purchasers.

Also, Ground Lime, a superior article for Builders.

ISAAC FRYER, Sec'y.
January 19, 1850.

Engine and Car Works, PORTLAND, MAINE.

THE PORTLAND COMPANY, Incorporated August 8th, 1846, with a capital of \$250,000, have erected their extensive Works upon the deep water of Portland Harbor, and receive and transport, to and from their works direct, to and from vessels of any class.

They now manufacture to order, and deliver upon the Railroads running in each direction from the city, or on shipboard as wanted, Locomotive, Stationary, or Steam Boat Engines; Passenger, Mail, Freight, Earth and Hand Cars; Railway Frogs, Switches, Chairs and Castings; and every other description of Machinery.

HORACE FELTON,
Superintendent.

JAMES C. CHURCHILL,
General Agent and Clerk.

RAILROADS.

EASTERN RAILROAD.

WINTER ARRANGEMENT.

On and after Monday, October 8, 1849, trains leave Boston daily (Sundays excepted);

For Lynn, 7, 8 $\frac{1}{2}$, 10 a.m., 12 $\frac{1}{2}$, 2 $\frac{1}{2}$, 4, 4 $\frac{1}{2}$, 6 $\frac{1}{2}$ p.m.
Salem, 7, 8 $\frac{1}{2}$, 10 a.m., 12 $\frac{1}{2}$, 2 $\frac{1}{2}$, 4, 4 $\frac{1}{2}$, 6 $\frac{1}{2}$ p.m.
Manchester and Gloucester, 10 a.m., 4 p.m.
Newburyport, 7 a.m., 12 $\frac{1}{2}$, 2 $\frac{1}{2}$, 4 $\frac{1}{2}$ p.m.
Portsmouth, 7 a.m., 2 $\frac{1}{2}$, 4 $\frac{1}{2}$ p.m.
Portland, Me., 7 a.m., 2 $\frac{1}{2}$ p.m.

And for Boston,

From Portland, 8 $\frac{1}{2}$ a.m., 4 p.m.
Portsmouth, 7, 10 $\frac{1}{2}$ a.m., 6 $\frac{1}{2}$ p.m.
Newburyport, 7 $\frac{1}{2}$, 11 $\frac{1}{2}$ a.m., 3 $\frac{1}{2}$ 7 $\frac{1}{2}$ p.m.
Gloucester, 7 $\frac{1}{2}$ a.m., 1 $\frac{1}{2}$ p.m.
Manchester, 8 a.m., 2 p.m.,
Lynn, 7 $\frac{1}{2}$, 8 $\frac{1}{2}$ a.m., 9 $\frac{1}{2}$, 10 $\frac{1}{2}$ a.m., 12 55*, 2 $\frac{1}{2}$ 4 $\frac{1}{2}$ * 8 $\frac{1}{2}$ * p.m.
Salem, 7 $\frac{1}{2}$, 8 $\frac{1}{2}$ a.m., 9*, 10 $\frac{1}{2}$ a.m., 12 40*, 2 $\frac{1}{2}$ 4 $\frac{1}{2}$ * 8*, p.m.

*Or on their arrival from the East.
Freight trains each way daily. Office 17 Merchants' Row, Boston.

Feb. 3. **JOHN KINSMAN,** Superintendent.

ALBANY AND BUFFALO RAILROADS.

Four Trains daily, Sundays excepted, viz:
Leave Albany, 6 a.m., 9 a.m., 2 p.m., 7 p.m.
Reach Buffalo, 15 hours, 18 hours, 23 hours, 18 hours.
Arrive from Buffalo, 7 p.m., 2 $\frac{1}{2}$ a.m., 12 $\frac{1}{2}$ m., 3 $\frac{1}{2}$ p.m.

Passengers by the Express Train reach Buffalo from New York, and New York from Buffalo, in 24 hours. The Isaac Newton and Oregon connect at Albany with this Train. Baggage ears, with careful baggage masters, run through with all the trains.

For Schenectady, Saratoga Springs & Whitehall, Leave Albany at 7 a.m. and 2 p.m. For Schenectady only at 6, 7 and 9 a.m. and 12 $\frac{1}{2}$, 2 and 7 p.m. For Erie Canal packets at 7 a.m. and 7 p.m. By Plank Road from Schenectady to Saratoga at all hours by stages, etc.

The Eastern Trains leave Albany at 7 a.m. and 3 p.m. The wagons of the company take baggage free between railroads and steamboats at Albany.

E. FOSTER, Jr., Sec'y
Albany and Schenectady Railroad Co.
Albany, August, 1849.

BOSTON AND MAINE RAILROAD.

Winter Arrangement, 1850.

Outward Trains from Boston

For Portland at 7 a.m. and 2 $\frac{1}{2}$ p.m.
For Rochester at 7 a.m., 2 $\frac{1}{2}$ p.m.
For Great Falls at 7 a.m., 2 $\frac{1}{2}$, 3 $\frac{1}{2}$ p.m.
For Haverhill at 7 and 9 $\frac{1}{2}$ a.m., 2 $\frac{1}{2}$, 3 $\frac{1}{2}$, 4 $\frac{1}{2}$, 5 $\frac{1}{2}$ p.m.
For Lawrence 7, 7 $\frac{1}{2}$, 9 $\frac{1}{2}$ a.m., 12m, 2 $\frac{1}{2}$, 3 $\frac{1}{2}$, 4 $\frac{1}{2}$, 5 $\frac{1}{2}$, 7 $\frac{1}{2}$, 9 $\frac{1}{2}$ p.m.
For Reading 7, 9 $\frac{1}{2}$ a.m., 12m, 2 $\frac{1}{2}$, 3 $\frac{1}{2}$, 4 $\frac{1}{2}$, 5 $\frac{1}{2}$, 7 $\frac{1}{2}$, 9 $\frac{1}{2}$ p.m.
For Medford 7 $\frac{1}{2}$, 9 $\frac{1}{2}$ a.m., 12 $\frac{1}{2}$, 2 $\frac{1}{2}$, 5, 6 $\frac{1}{2}$, 9 $\frac{1}{2}$ p.m.

The Station in Boston is on Haymarket Square.

CHAS. MINOT, Super't.

January 10, 1850.

NEW YORK AND HARLEM RAILROAD. NEW ARRANGEMENT.

On and after Wednesday, October 17th, 1849, the Cars will run as follows, (Sundays excepted) until further notice:

Trains will leave the City Hall, New York, for—

Harlem and Morrisania at 6 $\frac{1}{2}$, 8, 10, 11, 12 a.m., 2, 3 $\frac{1}{2}$, 4, 5, 6 $\frac{1}{2}$ p.m.
New Village, at 8 $\frac{1}{2}$, 10, 12 a.m., 3 $\frac{1}{2}$, 5, 6 $\frac{1}{2}$ p.m.
Fordham and Williams' Bridge, at 8 $\frac{1}{2}$, 10, 12 a.m., 2 $\frac{1}{2}$, 3 $\frac{1}{2}$, 5, 6 $\frac{1}{2}$ p.m.
Hunt's Bridge, Underhill's and Hart's Corners, at 8 $\frac{1}{2}$, 10 a.m., 3 $\frac{1}{2}$, 5 p.m.
Tuckahoe and White Plains, at 8 $\frac{1}{2}$, 10 a.m., 2 $\frac{1}{2}$, 3 $\frac{1}{2}$, 5 p.m.
Pleasantville, New Castle, Bedford, Mechanicsville, Purdy's, Croton Falls, and intermediate stations, on signal, 8 $\frac{1}{2}$ a.m., 2 $\frac{1}{2}$, 3 $\frac{1}{2}$ p.m.
Brewster's, Townner's, Patterson, Paulding's, South Dover, Dover Furnace, and Dover Plains, 8 $\frac{1}{2}$ a.m., 2 $\frac{1}{2}$ p.m.

NOTICE—Passengers are reminded of the great danger of standing upon the platform of the cars, and hereby notified that the practice is contrary to the rules of the Company, and that they do not admit any responsibility for injury sustained by any passenger upon the platforms, in case of accident.

Returning to New York will leave

Harlem and Morrisania at 6 08, 7 $\frac{1}{2}$, 8 37, 9, 10 6, 12 a.m., 1 43, 3 07, 3 $\frac{1}{2}$, 5, 5 47 p.m.
New Village, at 5 58, 8 27, 9 56 a.m., 1 33, 2 57, 5 36 p.m.
Fordham and William's Bridge at 5 $\frac{1}{2}$, 8 14, 9 43, 10 57 a.m., 1 20, 2 44, 5 24 p.m.
Hunt's Bridge at 8 04, 9 33 a.m., 2 34, 5 16 p.m. On signal.
Underhill's, at 7 56, 9 23 a.m., 2 26, 5 10 p.m. On signal.
Tuckahoe at 7 53, 9 18, 10 40 a.m., 2 23, 5 08 p.m.
Hart's Corners at 7 38, 9 03 a.m., 2 08, 4 54 p.m.—On signal.
White Plains at 7 $\frac{1}{2}$, 8 55, 10 20 a.m., 2, 4 47 p.m.
Davis' Brook at 8 40, 10 11 a.m., On signal. 4 39 p.m. On signal.
Unionville, 8 27, 10 11 a.m. On signal. 4 29 p.m.—On signal.
Pleasantville at 8 20, 9 56 a.m., 4 24 p.m.
Champanqua, at 8 10, 9 50 a.m. On signal. 4 18 p.m. On signal.
New Castle, at 7 56, 9 38 a.m., 4 07 p.m.
Bedford at 7 46, 9 32 a.m., 4 02 p.m.
Mechanicsville at 7 36, 9 22 a.m., 3 52 p.m.
Golden's Bridge, 7 28, 9 17 a.m. On signal, 3 47 p.m. On signal.
Purdy's at 7 20, 9 09 a.m., 3 39 p.m.
Croton Falls, at 7 $\frac{1}{2}$, 9 04 a.m., 3 34 p.m.
Brewster's, at 8 50 a.m., 3 20 p.m.
Townner's, at 8 35 a.m., 3 05 p.m.
Patterson, at 8 27 a.m., 2 57 p.m.
Paulding's, at 8 17 a.m., 2 47 p.m.
South Dover, 8 02 a.m., 2 32 p.m.
Dover Furnace, 7 55 a.m., 2 25 p.m.
Dover Plains, at 7 45 a.m., 2 15 p.m.

The trains for Harlem and Morrisania leaving City Hall at 6 $\frac{1}{2}$, 8, 10, 11, 12, 2, 4 and 6 $\frac{1}{2}$, returning from Morrisania and Harlem at 6 08, 7 $\frac{1}{2}$, 9, 12, 1 43, 3 07, 3 $\frac{1}{2}$ and 5 o'clock, will land and receive passengers at 27th 42d, 51st, 61st, 79th, 86th, 109th, 115th, 125th and 132d streets.

The Dover Plains train from New York at 2 $\frac{1}{2}$ p.m., returning leaving Dover Plains at 7 $\frac{1}{2}$ a.m., will not stop between White Plains and New York, (except at Tuckahoe, Williams' Bridge and Fordham), unless to leave passengers coming from above Croton Falls.

A car will precede each train ten minutes to take up passengers in the city. The last car will not stop, except at Broome st. and 27th street.

Freight Trains leave New York at 1 o'clock p.m.—Returning, leaves Dover Plains at 12 o'clock m.
For Sunday Arrangements, see hand bills.

M. SLOAT, Sup't.

**NEW YORK AND ERIE RAILROAD
OPEN TO ELMIRA.**

On and after the 8th of October, the trains will run as follows, (Sundays excepted):

THROUGH PASSENGER TRAINS from New York to Elmira, will leave the Company's Pier at the foot of Duane street, at 7 o'clock a.m. and 5 o'clock p.m., stopping at all the way stations.

From Elmira the through trains will leave for New York at 5 o'clock a.m. and 6 1/2 p.m., stopping also at all the way stations.

A SPECIAL WAY TRAIN, for Port Jervis and intermediate stations, except Sufferns, will leave New York every Saturday at 3 p.m., and will leave Port Jervis for New York every Monday morning, at 4 55 o'clock.

A MILK TRAIN, with Passenger Cars attached, will leave Port Jervis for New York at 3 o'clock a.m. and returning will leave New York for Port Jervis at 3 p.m. Another milk train with passenger car, will leave Piermont for Otisville at 9 a.m., and returning leave Otisville at 4 55 p.m., connecting with the freight boats to New York. The milk trains do not connect with the P. and R. railroad.

FREIGHT.—Freight leaves New York every night for all the regular stations on the road. A freight train will leave Elmira every morning at 3 20 o'clock a.m. A freight train will leave Port Jervis for New York every morning at 5 o'clock, and another at 8 a.m. with market freights.

A Special Train for cattle and other live stock, will leave Elmira on Tuesdays and Fridays at 12 20 p.m.; and from Port Jervis, for New York, on Wednesdays and Saturdays, at 8 40 a.m.

FARE from New York to Elmira \$5 75. The intermediate stations in proportion.

COMMUTATION TICKETS, at lower rates, for the stations between New York and Port Jervis, can be purchased at the New York and Piermont offices.

The Steamboat ERIE leaves New York for Piermont every day at 3 o'clock, and returns on the arrival of the train from Elmira, arriving at New York at about 7 1/2 p.m.

JAMES P. KIRKWOOD, Superintendent.

**GEORGIA RAILROAD. FROM AUGUSTA
TO ATLANTA—171 MILES.**

AND WESTERN AND ATLANTIC RAILROAD, FROM ATLANTA TO DALTON, 100 MILES.

This Road, in connection with the South Carolina Railroad, and Western and Atlantic Railroad, now forms a continuous line, 408 miles in length, from Charleston to Dalton (Cross Plains) in Murray county, Ga. 32 miles from Chattanooga, Tenn.

RATES OF FREIGHT.

		Between Augusta and Dalton, 271 miles.	Between Charleston, and Dalton, 408 miles.
1st class	Boxes of Hats, Bonnets, and Furniture, per cubic foot	\$0 18	\$0 28
2d class	Boxes and Bales of Dry Goods, Saddlery, Glass, Paints, Drugs, and Confectionary, per 100 lbs.	1 00	1 50
3d class	Sugar, Coffee, Liquor, Bagging, Rope, Cotton, Yarns, Tobacco, Leather, Hides, Copper, Tin, Feathers, Sheet Iron, Hollow ware, Castings, Crockery, etc.	0 60	0 85
4th class	Flour, Rice, Bacon, Pork, Beef, Fish, Lard, Tallow, Beeswax, Bar Iron, Ginseng, Mill Gearing, Pig Iron, and Grindstones, etc.	0 40	0 65
	Cotton, per 100 lbs.	0 45	0 70
	Molasses per hogshead	8 50	13 50
	" " barrel	2 50	4 25
	Salt per bushel	0 18	
	Salt per Liverpool sack	0 65	
	Ploughs, Corn Shellers, Cultivators, Straw Cutters, Wheelbarrows	0 75	1 50

German or other emigrants, in lots of 20 or more, will be carried over the above roads at 2 cents per mile.

Goods consigned to S. C. Railroad Company will be forwarded free of commissions. Freights payable at Dalton.

44*ly F. C. ARMS, Supt of Transportation.

LITTLE MIAMI RAILROAD.—SUMMER ARRANGEMENT.

CINCINNATI & SANDUSKY.

FIRST Passenger Train leaves Depot on East Front street, at 5 o'clock 10 minutes A. M. stops for breakfast at Morrow, and arrives at Springfield at 11 10 A. M. Leaves Springfield for Sandusky at 11 50 A. M.

Second Passenger Train leaves Depot 3 P. M. arrives at Springfield at 9 P. M. Passengers take tea at Springfield, and leaves for Sandusky at 9 1/2 P. M.

RETURNING.—First Train leaves Springfield at 4 A. M. Stop for breakfast at Xenia, and arrives at Cincinnati at 10 15 A. M.

Second Train leaves Springfield at 2 1/2 P. M. Stop for tea at Morrow, and arrives at Cincinnati, at 8 1/2 P. M. Passengers taking the Morning Train arrive at Sandusky at 9 P. M. Those taking the Afternoon Train arrive at 7 1/2 A. M. next morning, and proceed directly on in the boats.

Passengers for Columbus, Zanesville, Wheeling, and intermediate towns, should take the 5, 10 A. M. Train. The Ohi Stage Company are running the following Lines in connection with the Trains:

A Daily Daylight Line to Columbus from Springfield in connection with the Morning Train from Cincinnati. Also, Daily Lines to Columbus, from Xenia and Springfield, connecting with the 3 o'clock, pm. Train from Cincinnati.

Fare from Cincinnati to Xenia	\$1 90
Do do Springfield	2 50
Do do Sandusky City	6 50
Do do Buffalo	10 00
Do do Columbus	4 50

For other information and through tickets, apply at the Ticket Office on Broadway, near Front-st., Cincinnati.

W. H. CLEMENT, Superintendent.

The Company will not be responsible for Baggage exceeding 50 dollars in value, unless the same is returned to the Conductors or Agent, and freight paid at the rate of a passage for every 500 dollars in value above that amount.

PHILADELPHIA, WILMINGTON, & BALTIMORE RAILROAD.

Summer Arrangement.
April 1st, 1849.—Fare \$3.

Leave Philadelphia 8 1/2 am., and 10 pm.

Leave Baltimore 9 am., and 8 pm.

Sunday—Leave Philadelphia at 10 pm.

" " Baltimore at 8 pm.

Trains stop at way stations.

Charleston, S. C.

Through tickets Philadelphia to Charleston, \$20.

Pittsburg and Wheeling.

Through ticket, Philadelphia to Pittsburg, \$12.

" " Wheeling, 13.

Through tickets sold at Philadelphia office only.

Wilmington Accommodation.

Leave Philadelphia at 12 m. 4 and 7 pm.

Leave Wilmington at 7 1/2 am., 4 1/2 and 7 pm.

Newcastle Line.

Leave Philadelphia at 2 1/2 pm.—Baltimore at 1 1/2 pm

Fare \$3.—Second class, \$2.

N.B.—Extra baggage charged for.

I. R. TRIMBLE, Gen. Supt.

BALTIMORE AND SUSQUEHANNA RAILROAD.—Reduction of Fare. Morning and Afternoon Trains between Baltimore and York.—The Passenger Trains

run daily, except Sundays, as follows:

Leave Baltimore at 9 am. and 3 1/2 pm.

Arrive at 9 am. and 6 1/2 pm.

Leave York at 5 am. and 3 pm.

Arrive at 12 1/2 pm. & 8 pm.

Leave York for Columbia at 1 1/2 pm. & 8 am.

Leave Columbia for York at 8 am. & 2 pm.

Fare:

Fare to York \$1 50

" " Wrightsville 2 00

" " Columbia 2 12 1/2

Way points in proportion.

PITTSBURG, GETTYSBURG, AND HARRISBURG.

Through tickets to Pittsburg via stage to Harrisburg

Or via Lancaster by railroad

Through tickets to Harrisburg or Gettysburg

In connection with the afternoon train at 3 1/2 o'clock, a horse car is run to Green Spring and Owning's Mill, arriving at the Mills at 5 1/2 pm.

Returning, leaves Owning's Mills at 7 am.

D. C. H. BORDLEY, Supt.

Ticket Office, 63 North st.

PHILADELPHIA & READING RAILROAD.

Passenger Train Arrangement for 1849.

A Passenger Train will leave Philadelphia and Pottsville daily, except Sundays, at 9 o'clock am.

The Train from Philadelphia arrives at Reading at 12 18 m.

The Train from Pottsville arrives at Reading at 10 43 am.

Fares. Miles. No. 1. No. 2

Between Phila. and Pottsville, 92 \$3.50 and \$3.00

" " Reading 58 2.25 and 1.90

" " Pottsville 34 1.40 and 1.20

Five minutes allowed at Reading, and three at other way stations.

Passenger Depot in Philadelphia corner of Broad and Vine streets.

BALTIMORE AND OHIO RAILROAD AND WASHINGTON BRANCH.

On and after January 1, 1850, Passenger Trains will run as follows:

Leave Baltimore for Ellicott's Mills, Frederick, Harper's Ferry, Martinsburg, Hancock and Cumberland, every morning at 7 1/2 o'clock. This line carries the Great Mail, and connects with Post Coaches at Cumberland, for Wheeling and Pittsburg, over the National Road. Also with the Winchester Trains, at Harper's Ferry. N.B.—Passengers for Pittsburg take the steamers of the Monongahela slack water navigation at Brownsville, only 76 miles from Cumberland.

Leave Baltimore for Ellicott's Mills, Frederick and Harper's Ferry, daily, except Sunday, at 4 1/2 p.m.

Leave Baltimore for Washington City, daily, at 6 a.m. and 5 p.m.—daily, except Sunday, at 9 a.m.

The early train connects with the Great Southern Line, via Fredericksburg and Richmond, to Charleston.

Leave Cumberland for Baltimore, etc., at 8 1/2 a.m., daily, connecting with the train from Winchester at Harper's Ferry—with the Evening Train to Washington City, at the Relay House—and with the Evening Train to Philadelphia, at Baltimore. Time for arriving at Baltimore, 5 1/2 p.m.

Leave Harper's Ferry for Baltimore, daily, except Sunday, at 7 1/2 a.m.—taking in Passengers who leave Frederick at 8 1/2 a.m.

Leave Washington for Baltimore, daily, at 6 a.m. & 5 1/2 p.m., and daily, except Sunday, at 9 1/2 a.m. The early train connects at the Relay House with the morning line to Cumberland and the West, and at Baltimore with the day line to Philadelphia and New York.

Through tickets are sold at Philadelphia and Baltimore for Pittsburg and Wheeling, and at Philadelphia and New York for Charleston, S. C., at the following

RATES OF FARE.

To Pittsburg. Wheeling. Charleston.

In winter. Summer. Win. Sum. ton.

From Philadelphia, \$13 \$12 \$14 \$13 \$20

" " Baltimore, 11 10 12 11

" " New York, 20

Passengers leaving New York not later than the afternoon line via Newark, etc., reach Baltimore in season to take the next morning's lines to the South and West.

Passengers leaving Cumberland in the morning and Washington in the evening lines, reach Baltimore in season to proceed to Philadelphia by the evening train at 8 p.m.—so as to reach New York before noon the next day.

An Emigrant line by burthen cars, leaves Baltimore every morning, except Sundays, at 4 o'clock—connecting with a line of the previous day from New York—and at Cumberland with a wagon line to Pittsburg or Brownsville and Wheeling. Fare by this line:

From New York to Pittsburg, \$3 00

" " Philadelphia " 6 50

" " Baltimore " 5 00

By order, J. T. ENGLAND, Agent.

SOUTH CAROLINA RAILROAD.—A Passenger Train runs daily from Charleston, on the

arrival of the boats from Wilmington, N. C., in connection with trains on

the Georgia, and Western and Atlantic Railroads—and by stage lines and steamers connects with the Montgomery and West Point, and the Tusculum Railroad in N. Alabama.

Fare through from Charleston to Montgomery

daily \$26 50

Fare through from Charleston to Huntsville,

Decatur and Tusculum 22 00

The South Carolina Railroad Co. engage to receive merchandise consigned to their order, and to forward the same to any point on their road; and to the different stations on the Georgia and Western and Atlantic Railroad; and to Montgomery, Ala., by the West Point and Montgomery Railroad.

JOHN KING, Jr., Agent.

CENTRAL RAILROAD FROM SAVANNAH TO MACON, (Ga.) 190 1/2 miles.

Passenger Trains leave Savannah and Macon daily at 7 a.m.
Passenger trains arrive daily at Savannah, 6 15 p.m.
" " " " Macon, 6 45 p.m.

This road, in connection with the Macon and Western road from Macon to Atlanta, and the Western and Atlantic road from Atlanta to Dalton, now forms a continuous line of 391 1/2 miles in length* from Savannah to Dalton, Murray county, Ga. and with the Memphis Branch railroad, and Stages connect with the following places:

Tickets from Savannah to Macon,	\$5 75
" " " Atlanta,	9 50
" " " Augusta,	6 50
" " " Columbus,	15 00
" " " Opelika,	17 00
" " " Jacksonville, Ala.,	20 00
" " " Talladega,	
" " " Huntsville, Ala.,	22 00
" " " Decatur,	
" " " Tusculumbia, Ala.,	22 50
" " " Tuscaloosa, Ala.,	
" " " Columbus, Miss.,	28 00
" " " Aberdeen,	
" " " Holly Springs,	
" " " Nashville, Tenn.,	
" " " Murfreesboro',	25 00
" " " Columbia, do.,	
" " " Memphis, do.,	30 00

An extra Passenger Train leaves Savannah on Saturdays, after the arrival of the Steam-ships from New York, for Macon, and connects with the Macon and Western railroad; and on Tuesdays, after the arrival of the Macon and Western cars, an extra Passenger Train leaves Macon to connect with the Steam ships for New York.

Stages for Tallahassee and intermediate places connect with the road at Macon, Mondays, Wednesdays, and Fridays, and with Milledgeville at Gordon daily.

Passengers for Montgomery, Mobile and New Orleans take stage for Opelika from Barnesville through Columbus, a distance of 97 miles, or from Griffin through West Point, a distance of 93 miles.

* The Western and Atlantic railroad will soon be completed between Dalton and Chattanooga, a distance of 423 1/2 miles from Savannah, of which due notice will be given.

† Head of the West Point and Montgomery railroad, on which the fare to Montgomery is about \$2.

RATES OF FREIGHT FOR MERCHANDISE GENERALLY, FROM SAVANNAH TO MACON.

Measurement Goods.—Boxes of hats, bonnets, furniture, shoes, saddlery, dry-goods, and other measurement goods, per cubic foot 13 cents.
Crockery Ware, in crates, boxes or hhds, per cubic foot. 10 "
Goods by Weight, 1st class.—Boxes of glass, paints, drugs & confectionary, per 100 lbs., 50 "
2d class—Sugar, coffee, rope, butter, cheese, lard, tobacco, leather, hides, copper, sheet and hoop iron, tin, hard and hollow ware, rice, boxes soap and candles, bagging, and other heavy articles not enumerated below, per 100 lbs., 45 "
3d class—Flour, bacon, liquors, pork, beef, fish, tallow and beeswax, per 100 lbs., 40 "
4th class—Mill-gearing, pig and bar iron, grind and millstones, nails, spikes and coal, 100 lb. 30 "
Barrels of beets, bread, crackers, potatoes, ice, fruit, oysters, onions, and all light bbls, each, 75 "
Oil and molasses per hhd., (smaller casks in proportion) \$6 00 "
Salt per sack not exceeding 4 bushels, 50 "
Goods consigned to Thos. S. Wayne, Forwarding Agent, Savannah, will be forwarded free of commission. WM. M. WADLEY, Supt. Savannah, Ga., February 24, 1850.

THE WESTERN AND ATLANTIC RAILROAD.—This Road is now in operation to Oothcaloga, a distance of 80 miles, and connects daily (Sundays excepted) with the Georgia Railroad.

From Kingston, on this road, there is a tri-weekly line of stages, which leave on the arrival of the cars on Tuesday, Thursday and Saturday, for Warrenton, Huntsville, Decatur, and Tusculumbia, Alabama, and Memphis, Tennessee.

On the same days the stages leave Oothcaloga for Chattanooga, Jasper, Murfreesborough, Knoxville and Nashville, Tennessee.

This is the most expeditious route from the east to any of these places.

CHAS. F. M. GARNETT,
Chief Engineer.

GREAT NORTHERN & SOUTHERN MAIL ROUTE.

From New York to Charleston, S. C. daily, via Philadelphia, Baltimore, Washington City, Richmond, Petersburg, Weldon and Wilmington, N. C.

Travellers by this route, leaving New York at 4 p.m., Philadelphia at 10 p.m., and Baltimore at 6 a.m., proceed without delay at any point on the route, arriving at Richmond, Va., in a day, and at Charleston, S. C., in two and half days from New York.

Through tickets from New York to Charleston, \$20 00
" " " " Baltimore to Richmond, 7 00
" " " " Petersburg, 7 50
For tickets to Richmond and Petersburg, or further information, apply at the Southern Ticket Office, adjoining the Washington Railroad Ticket Office, Pratt Street, Baltimore. STOCKTON & FALLS. October, 1849.

ST. LAWRENCE & ATLANTIC RAILROAD COMPANY.

Notice is hereby given that the Trains run twice per day between

Montreal and St. Hyacinth, leaving each terminus alternately, until further notice.

Leaving St. Hyacinth at 7 a.m.
" " " " 3 p.m.
Leaving Montreal at 10 a.m.
" " " " 6 p.m.

THOMAS STEERS, Secretary.

May 31, 1849.

MACHINE WORKS OF ROGERS KETCHUM & GROSVENOR, Patterson, N. J. The undersigned receive orders for the following articles manufactured by them of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

Railroad Work.—Locomotive Steam Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of Cast Iron a variety of patterns and chills; Car Wheels of Cast Iron with wrought tires; Axles of best American refined iron; springs; boxes and bolts for cars.

Cotton, Wool and Flax Machinery of all descriptions and of the most improved patterns, style and workmanship.

Mill gearing and millwright work generally, hydraulic and other presses; press screws; callenders; lathes and tools of all kinds; iron and brass castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Patterson, N. J. or 74 Broadway, New York.

NOTICE TO

Superintendents of Railroads.

TYLER'S PATENT SAFETY SWITCH.—The undersigned would respectfully call their attention to his Patent Safety Switch, which from long trial and late severe tests has proved itself perfectly reliable for the purpose for which it was intended. It is designed to prevent the train from running off when the switch is set to the wrong track by design or accident. The single rail or gate switch is established as the best and safest switch for the ordinary purpose of shifting cars from one track to another, but it is liable to the serious evil of having one track open or broken when connected with the other. My improvement entirely removes this evil, and while it accomplishes this important office, leaves the switch in its original simplicity and perfection of a plain unbroken rail, connecting one track with the other ready for use.

The following decision of the Commissioner of Patents is respectfully submitted to Railroad Engineers, Superintendents, and all others interested in the subject.

(COPY.)

UNITED STATES PATENT OFFICE,
Washington City, D.C., April 23rd, 1846.

SIR: You are hereby informed that in the case of the interference between your claims and those of Gustavus A. Nicolls, for improvements in safety switches—upon which a hearing was appointed to take place on the 3d Monday in March, 1846, the question of priority of invention has been decided in your favor. Inclosed is a copy of the decision. The testimony in the case is now open to the inspection of those concerned.

Yours respectfully, EDMUND BURKE,
Commissioner of Patents.

To Philos B. Tyler.

Any further information may be obtained by addressing P. B. TYLER, Springfield, Mass., or JOHN PENOLETON, Agent, 149 Hudson St., New York.

ENGINEERS' AND SURVEYERS'

INSTRUMENTS MADE BY

EDMUND DRAPER,

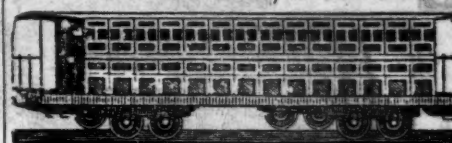
Surviving partner of

STANCLIFFE & DRAPER.



No. 23 Pear street, below Walnut, Philadelphia.

CAR MANUFACTORY CINCINNATI, OHIO.



KECK & DAVENPORT WOULD RESPECTFULLY call the attention of Railroad Companies in the West and South to their establishment at Cincinnati. Their facilities for manufacturing are extensive, and the means of transportation to different points speedy and economical. They are prepared to execute to order, on short notice, Eight-Wheeled Passenger Cars of the most superior description. Open and Covered Freight Cars, Four or Eight-Wheel Crank and Lever Hand Cars, Trucks, Wheels and Axles, and Railroad Work generally.

Cincinnati, Ohio, Oct. 2, 1848.

44ti

C. W. Bentley & Co.,

IRON Founders, Portable Steam Engine Builders and Boiler Makers, Corner Front and Plowman Sts., near Baltimore St. Bridge.

BALTIMORE, MARYLAND.

Their Engines are simple in their construction, compact and durable; they require no brick work in setting them, and occupy but a small space (a six horse power engine and boiler, standing on a cast iron plate of three by six feet.)

They also manufacture Major W. P. Williamson's new oscillating Engine; a superior article, combining cheapness and simplicity (one of which may be seen in operation at their shop.) Both of these engines are adapted to any purpose where power is required, and may be made of any capacity; and for economy in use of fuel are unsurpassed.

All kinds of machinery made to order. Steam Generators, Force Pumps, Wrought Iron Pipes and Fittings for Steam, Water, Gas, etc., constantly on hand, Baltimore, June 6, 1849.

PHILADELPHIA CAR MANUFACTORY,

CORNER SCHUYLKILL 2d and HAMILTON STS., SPRING GARDEN, PHILADELPHIA CO., PA.

Kimball & Gorton,

Having recently constructed the above works, are prepared to construct at short notice all kinds of

RAILROAD CARS, Viz:

Passenger Cars of all classes—Open and Covered Freight and Express Cars—Coal Cars—Hand Cars & Trucks of all descriptions.

They are also prepared to furnish Chilled Wheels of any pattern. Car Wheels & Axles fitted and furnished. Snow Ploughs and Tenders made to order. Steel and other Springs always on hand.

All orders will be filled at short notice, and upon as good terms as at any other establishment in the country. Omnibuses from the Exchange run within one square of the manufactory every 10 minutes during the day. Philadelphia, June 16, 1849.

CORROSIVE SUBLIMATE.

THIS article now extensively used for the preservation of timber, is manufactured and for sale by POWERS & WEIGHTMAN, manufacturing Chemists, Philadelphia. Jan. 20, 1849.

Coal.

CUMBERLAND SEMI-BITUMINOUS COAL superior quality for Locomotives, for sale by

H. B. TEBBETTS,
No. 40 Wall St., New York.

May 12, 1849.

Im19

FOWLER M. RAY'S METALLIC INDIA RUBBER CAR SPRINGS.

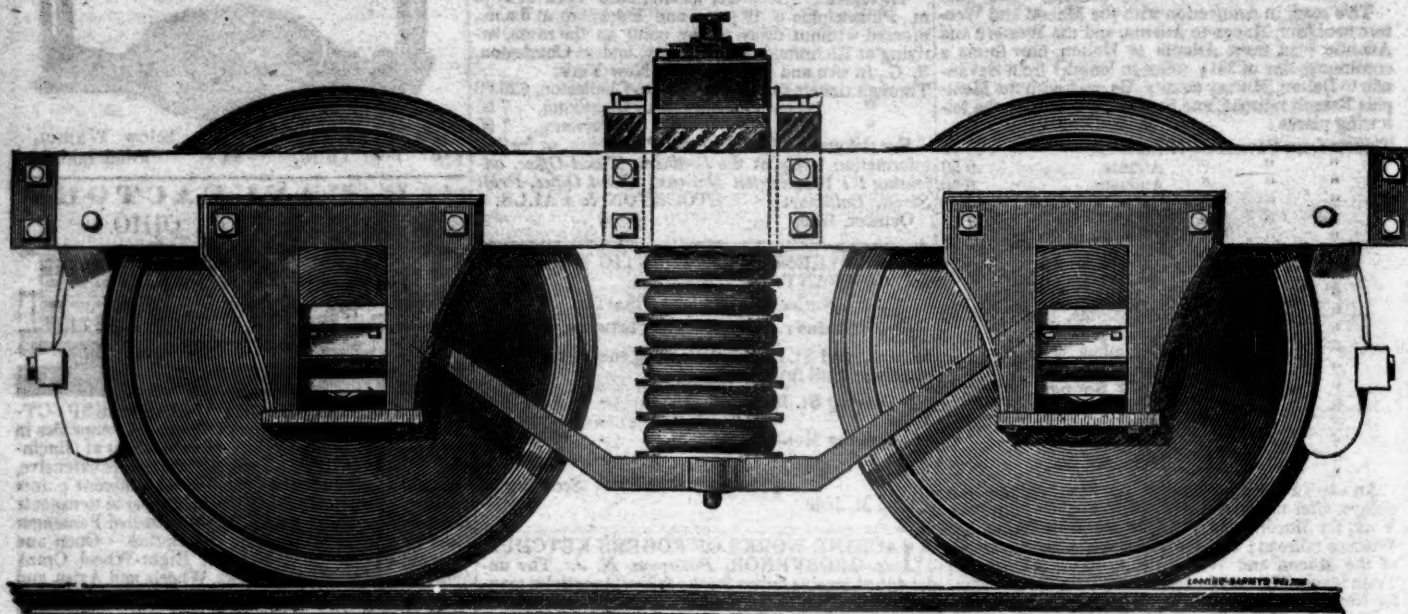


Fig. 1.

Fig. 2.

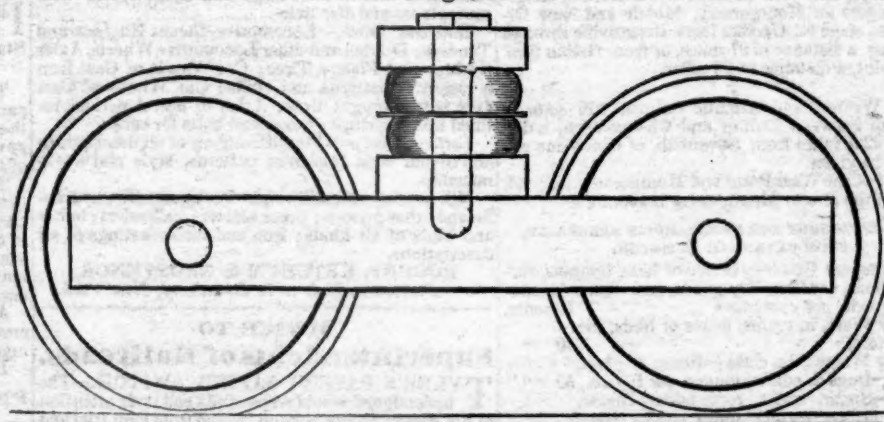
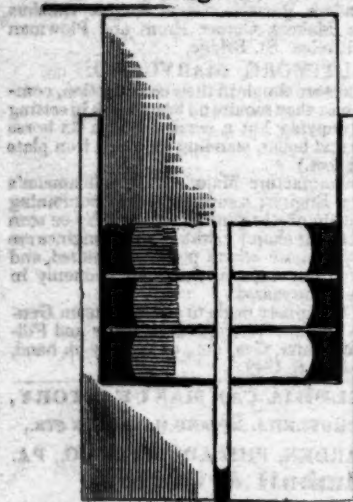


Fig. 3.

So much has been published for the purpose of misleading the public in regard to the inventorship of the India-rubber Railroad Spring, patented in the United States by Mr. W. C. Fuller, that the New England Car Company, proprietors of this invention, have deemed it proper, for the information of Railroad Companies, Car Builders and the public generally, to lay before them the facts upon which they found their claim to this invention, and to a Patent therefor.

Cut No. 1, Represents a cross section of the first model made by Mr. Tucker, under the direction of Mr. Ray, in the summer of 1844, and to which Mr. Tucker, Mr. Bradley and Mr. Bannester testify as being the model marked "B."

Cut No. 2, Represents the model made in 1845, to which Mr. Osgood Bradley and Gen. Thos. W. Harvey have testified.

Cut No. 3, Represents a rough sketch made by Mr. Ray in 1844, which he gave to a man about departing for England to take out some patents, who promised to write to Ray after his arrival in that country—which promise he has probably forgotten.

Mr. W. C. Fuller, of England, patented the above Spring in that country on the 23d October, 1845. He filed his enrollment April 23d, 1846, and on the 22d October, 1846, he took out a patent in the United States under the title, "For Improvement in Railway Carriages," when the improvement consisted in the spring, and not in the carriage.

The reader will perceive by the annexed testimony, that the India-rubber Railroad Car Spring was invented by Mr. Ray about two years previous to the date of Mr. Fuller's enrollment.

The Depositions are omitted for want of room, but will be published in full in the course of a few weeks.

AMERICAN RAILROAD JOURNAL.
PUBLISHED BY J. H. SCHULTZ & CO.
ROOM 12, THIRD FLOOR,
No. 136 Nassau Street,
NEW YORK.]

TERMS. — Five Dollars a year, in advance.

RATES OF ADVERTISING.

One page per annum.....	\$200 00
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One column ".....	4 00
One square ".....	1 50
Professional Cards per annum.....	5 00

LETTERS and COMMUNICATIONS to this Journal may be directed to the Editor,
HENRY V. POOR,
136 NASSAU STREET.